ESSAYS ON EXPERIMENTAL ECONOMICS

STUDYING THE POLITICAL ECONOMY OF THE EGYPTIAN TRANSITION

by

Sarah Mansour

A thesis submitted in partial fulfillment of the requirements for the degree of
Doctor of Philosophy in Economics

University of Warwick, Department of Economics

December 2014

Contents

List of tables

List of Figures

Acknowledgements

I would like to express my heartfelt gratitude to my supervisors Marcus Miller and Michael McMahon for facilitating my research. Mazen, my dearest husband and my best friend, thank you for being so understanding during my toughest moments of my life and for being a source of continuous solid support and guidance throughout this venture. I dedicate this Ph.D. thesis to you and to my two lovely children, Mariam and Ibrahim, who are the pride and joy of my life. I appreciate all your patience and support during mummy's Ph.D. studies. I am also extremely thankful and indebted to Nabila, my mother in law, Abdelrahman, my father in law, for helping and supporting me during my PhD studies and for taking care of my kids while I was away. Mum, dad and bro, I do not know how to thank you enough for providing me with the opportunity to be where I am today. I can also never forget Mokbel and Soaad, my grandparents, for their support during my high school years. I dedicate this work to you all.

My very special thanks go to my dearest mentor, Dr Mahmoud Mohieldin, who encouraged me to further pursue with my Masters and PhD studies abroad. I would also like to thank all those who have contributed financially towards the completion of my PhD. They are (in order of contribution): Mr Mamdouh Abbas (Intro Group), Mr Fareed Khamis (MFK Foundation for Community Development), Al Masry Foundation for Community Development, the Faculty of Economics & Political Science at Cairo University, and the Economics Department at Warwick University. Many thanks also go to the three funding institutions that have funded my lab experiments; Georgia State University, Ford Foundation, and New York University.

Declaration

‘This thesis is submitted to the University of Warwick in support of my application for the degree of Doctor of Philosophy. It has been composed by myself and has not been submitted in any previous application for any degree.’

‘The work presented (including data generated and data analysis) was carried out by the author except in the cases outlined below:

In chapter 2:

Experimental design was joint work of Mansour, Sadiraj and Wallace.

Conduct of experiment was joint work of Mansour and Wallace.

Data analysis was joint work of Mansour and Sadiraj.

In chapter 3:

‘Experimental design was joint work of Mansour, Sadiraj and Wallace.

In chapter 4:

‘Experimental design was joint work of Hassan, Mansour, and Morton.

Conduct of experiment was done completely by Mansour.

Data analysis was joint work of Mansour and Morton.

In chapter 5:

‘Experimental design was joint work of Hassan, Mansour, and Morton.’

Responsibility for the remaining errors is solely mine.

Abstract

This thesis uses economics-style incentivised laboratory experiments to study the effects of the political transformation in Arab Spring Countries (frequent recalling of governments, political and social polarisation, and campaign dynamics of founding elections) on economic outcomes; such as tax compliance, support for painful economic reforms, corruption, and interpersonal trust. The main focus of this *thesis* is on Egypt, being the largest Arab country in terms of population, historically the most influential in the region, and with a dominant cultural influence felt all over the Arab world.

I find the following experimental evidence: (i) Giving citizens the right to recall government officials *decreases* the level of corruption in government through the increased accountability it imposes on elected politicians. Specifically, corruption is reduced by 14% in the presence of this right ($p=0.04$). (ii) Empowering citizens with the right to recall government officials was also found to decrease tax compliance by 20% due to the high frequency of divisive elections associated with this newly acquired right in a newly democratised country and the creation of losers who become unsatisfied with the outcome of the election process and thus the psychological costs associated with their incompliance are minimized. (iii) Ideological polarisation in elections can impede economic reform. And that (iv) negative campaigning in elections can impact negatively on the level of interpersonal trust in the society.

Chapter 1

Introduction

The 'Arab Spring Uprising' that has swept a number of Arab countries since late 2010, and which has erupted against the old authoritarian regimes in these countries, has left researchers wondering whether the Arab World is on a path to a better future, whether the new set of institutions that have emerged are capable of bringing economic prosperity to ordinary citizens, or whether these countries are hitting stumbling blocks that are going to delay the process of political and economic transformation for many years to come.

The focus of this *thesis* will be on studying the effects of the political transformation in these countries (frequent recalling of governments, political and social polarisation, and campaign dynamics of founding elections) on economic outcomes; such as tax compliance, support for painful economic reforms, corruption, and trust. The main focus of this *thesis* will be on Egypt, being the largest Arab country in terms of population, historically the most influential in the region, and with a dominant cultural influence felt all over the Arab world. This makes studying the Egyptian case very important as changes in Egypt are echoed in the region.

According to Acemoglu and Robinson (2013), it is the political transformation that follows revolutions (manifested in overthrowing the elites who controlled power,

creating a society where political rights are much more broadly distributed, and creating a system where the government is accountable) that is required for a poor society to become rich. Consequently, Acemoglu and Robinson believe that the reason behind Britain being richer than Egypt is that in 1688 Britain had a revolution that transformed the politics and thus the economics of the nation. Indeed, the experience of Egypt has shown that politics affects economics. Despite the fact that Egyptians saw their economic problems as being fundamentally caused by their lack of political rights, a political transformation cannot be taken for granted to be a panacea. This is because most of the political institutions in old democracies are relatively new to Egyptians; concept of partisanship, experience with free and fair elections…etc. Examining the impact of these newly acquired political rights on the economy thus becomes of utmost importance.

However, with Egypt being a developing country, the availability of reliable data becomes an issue given the fact that most of macroeconomic data are produced by government agencies that used to operate under authoritarian contexts, making such data either incomplete or impartial. Hence, to be able to test the above mentioned relationships, while overcoming the problem of data availability, an experimental methodology has been utilised. This technique not only solves the data problem, but it also provides us with a better understanding of the Egyptian culture through delving into the behaviour of Egyptians under different contexts in controlled environments.

Turning to the main drivers behind the revolution, one can see that fighting corruption has been central in all Arab Spring Uprisings. Indeed, most of the statements taken from Egyptians while protesting in Tahrir square had the word ‘corruption’ in them “We are living amid a corrupt system that has to change”, “We are suffering from

corruption and oppression", and "I hope that by the end of this year, we will have an elected government and that universal freedoms are applied and that we put an end to the corruption that has taken over this country" (Acemoglu & Robinson, 2013). In fact, corruption is not only a concern in Arab Spring uprisings, but also a concern of countries around the world due to its potential undermining of trust in government and reduction in the efficiency of public goods provision (The World Bank, 2004). With most Arab Spring countries currently writing new constitutions and establishing new political systems, the time is right for understanding the role that political institutions may play in enhancing or mitigating corruption, especially that there has been little empirical research on the impact of political institutions on corruption. The second chapter in this *thesis* thus uses a series of laboratory experiments to examine the impact of the 'right to recall', a political institution that has been recently enshrined in the Egyptian constitution, on the level of government corruption. We find experimental evidence suggesting that such an institution *can decrease* the level of corruption in government through the increased accountability it imposes on elected politicians.

Another driver behind the eruption of the Arab Spring Uprisings is the deterioration in living conditions of the majority of the population. A multidimensional reform process is, thus, inevitable for governments of these countries to build a modern society with high growth prospects. On one dimension, a clear picture must be developed for the main factors affecting tax compliance behaviour of citizens. Unless people pay the taxes they are required by law to pay, a general welfare state will eventually collapse. Understanding the behavioural aspects of the tax compliance decision is what lies at the heart of the design of effective policies for reducing tax evasion. Although there is a

growing literature on the determinants of an individual's tax compliance behaviour, with experiments focusing on factors like deterrence, fiscal exchange, and moral sentiments, no research has examined the effect of frequent recall of officials on tax compliance. A main purpose of the third chapter of this *thesis* is to bridge this gap in the literature by examining the effect of the 'right to recall', as a political institution, on tax compliance behaviour of citizens in newly democratised countries. I first create an income and taxation environment to test for compliance. Empowering subjects in a treatment group with the right to recall government officials was found to decrease tax compliance by 20%.

Another dimension for tackling the problem of deterioration in living standards of the majority of the population is to examine the obstacles these countries face in getting its citizens to support tough, but necessary, economic reform measures. One such obstacle could be the deep political polarisations created in these societies. Indeed, since mid-2011, the Egyptian public opinion has been extremely polarised and deeply divided. Many would argue that this has been a result of electoral politics. In other words, that electoral competition since 2011 has done nothing but turning politicians against each other. Those politicians relied heavily on polarising the population rather than mobilising the population to supporting tough reforms to the country's challenging problems. In this spirit, the fourth chapter in this *thesis* investigates whether elections, being the cornerstone of democracy, are helping or not, in reforming Egypt's major economic problems. We examine whether political polarisation in elections is an obstacle to reform in an incentivised laboratory experiment using natural ideological differences in Egypt. Specifically, we create political societies which subjects join based on ideological

preferences. Then, voters choose between enacting a reform, which will lead to higher payoffs for all (but has a differential benefit for supporters of one of the political societies) versus not enacting the reform and everyone facing the same lower payoffs. We find that when voters are provided with information that support for the reform varies across ideological societies in previous sessions, they are significantly more likely to report that their vote choices are influenced by their society membership to a greater extent than when such information is not provided. We also find evidence that polarising information influences voter choices in the election. Our results suggest that ideological polarisation in elections can impede economic reform.

Moving on to trust, one finds ample evidence indicating its contribution to economic, political and social success (Knack & Keefer, 1997a; Zak & Knack, 2001a). Nevertheless, 78 percent of Egyptians are un-trustful of each other (World Values Survey, 2012). With negative campaigning becoming a dominant feature of current Egyptian politics with politicians trying to discredit their opponents- both with respect to personal traits and policies- the final chapter of this *thesis* focuses on negative campaigning and examines its effect on both trust among citizens and trust in the overall political system. Election campaigns have originally been created to help citizens make voting decisions through communicating information about candidates (Brians & Wattenberg, 1996; Lipsitz *et al.*, 2005; Sides *et al.*, 2010; Stevens *et al.*, 2008). However, recent campaigns have increasingly been relying on a negative tone. In this chapter, I contribute to the broad literature on the effect of negative campaigning on turnout and candidate evaluations, by looking carefully at one important mechanism through which it operates, namely interpersonal trust. I use a laboratory experiment in which subjects are

randomly assigned to a control group, a positive campaigning condition or a negative campaigning condition. They then take part in the well-known trust game introduced in Berg et al. (1995). One novelty of this study is that instead of only relying on attitudinal reports of trust in other citizens and candidates, we generate a behavioural measure of trust by having participants play "the trust game". I find that when subjects are faced with negative information regarding potential candidates' personality, they are significantly more likely to contribute a smaller amount of money in the trust game (13 percent less) than when such information is not provided. My results suggest that negative campaigning in elections can impact negatively on people's trust in each other.

I believe that understanding the behaviour of Egyptians to political transformations taking place in the country, during this critical transitional period, will definitely shed significant light on where the current Egyptian economy stands and where it is likely to be headed. It will also act as guidance for other countries in the region which face similar economic and political challenges.

Chapter 2

Political Institutions and Corruption: An Experimental Examination of the "Right to Recall"

2.1 Introduction

"There can be no doubt, that if power is granted to a body of men, called representatives, they like any other men will use their power not for the advantage of the community but for their own advantage, *if they can*."

James Mill (1773-1836)[1]

The World Bank (2004) considers corruption to be "…the single greatest obstacle to economic and social development". There are many definitions and versions of corruption, some blatantly illegal, others more nuanced and sometimes even legal. We will confine ourselves in this chapter to the definition used by the World Bank (1997) and Bardhan (1997, p.1321) which see corruption as the use of public office for private

[1] For more details, see (Ball, 1992.).

gains, where an official assigned the authority of making decisions for the group abuses it by delivering decisions that lead to private enrichment.

There is by now an extensive literature that establishes strong association among corruption, the inefficient allocation of public goods, and growth-related outcomes (Bai & Wei, 2000; Burki & Perry, 1998; Glynn *et al.*, 1997; Kaufmann *et al.*, 1999; Mauro, 1995).[2] In particular, corruption has been identified as a major source of government failure in public good provision.[3] Understanding what factors breed corruption and whether they can be altered is an important line of inquiry. While there is substantial theoretical literature linking corruption to the type of political institution (Kunicová & Rose-Ackerman, 2005; Persson *et al.*, 1997), the empirical literature is limited. This is especially true for economies in transition, which may be able to control corruption to some degree by adopting particular political institutions.

Our study contributes to the emerging empirical literature on the determinants of government corruption with particular attention devoted to the role of citizens' right to recall officials - a political institution that has not been rigorously examined in the literature.[4] The idea is that the right to recall offers a political channel that may increase political accountability of officials compared to those officials who have a fixed term in office. The threat of recall, say due to dissatisfaction with the official's rent-seeking

[2] There is an argument that corruption may reduce other transactions costs associated with investment and economic development but there is little empirical support for this "corruption greasing the wheels" hypothesis (see, for example Fuest, *et al.*, 2013.).

[3] "…public goods often face a double jeopardy: market failure compounded by government failure…" (Kaul, *et al.*, 1999.).

[4] The 'right to recall' exists in parliamentary systems under the name 'no confidence vote' where the parliament can initiate a motion to recall the prime minister. In presidential systems, however, there is no such right in the constitution, with the exception of Venezuela. In the US, for example, there are 'right to recall' governors but not presidents. We do not consider impeachment as a 'right to recall' institution.

behaviour, may reduce the incidence of such behaviour. In this context, this chapter makes several specific contributions. First, we take a novel approach to understanding the role that the right to recall plays in deterring/enhancing corruption in a controlled environment through a series of laboratory experiments. Secondly, we are the first to study strategic interactions in a stylized game that integrates several games associated with public sector-citizen interaction, previously studied in isolation, such as public good games, tax compliance games, and recall elections. Thirdly, our findings add to the literature on equilibrium selection and behaviour in repeated games. A unique feature of our study is conducting experiments in Egypt (with Egyptian students) while the country was experiencing political turmoil; in Egypt the right to recall rulers has been practiced twice in less than three years (removing Mubarak in 2011 and Morsi in July 2013) and in both cases, corruption charges were among the demands of the protesters.[5]

Ex ante, we expect the right to recall an official while in office to be more conducive to the socially intended functioning of officials than simply providing an unchallenged fixed term of office. We test this hypothesis in this chapter. Our experimental methodology is particularly relevant given the difficulty of collecting observational data on such events[6]. Specifically, we (i) model corruption that manifests itself through inefficient provision of public goods, (ii) identify two institutions, scheduled replacements and recall-enabled replacements, that may have different impacts

[5] As per the new constitution of Egypt (January 2014), the right to recall the president has been enshrined as a constitutional right – probably for the first time in a semi-presidential system. According to article 161, a two-thirds majority of parliament can initiate a motion to withdraw confidence from the president. Such a motion, however, has to be approved by the electorate in a public referendum. If rejected, the president remains in office and parliament is automatically dissolved. At the time of our experiments, the right to recall was not yet institutionalised in the political system.

[6] During the last three decades, various organisations have collected and published data on corruption. However, most corruption indicators are about perceived and not actual levels of corruption.

on limiting corruption, (iii) offer an equilibrium analysis of the two and (iv) test the empirical performance of such institutions in the lab.

The need for empirical testing is of a great importance as theoretically the recall option can be predicted to limit corruption, or not, depending on the strategies employed by players; subgame perfect equilibrium predicts no recall-effect on corruption but there are other equilibria in which recall-enabled replacements are more effective in hindering corruption than scheduled replacements. Specifically, we simulate a familiar interaction between public officials and the citizenry (through a tax experiment) to investigate how scheduled replacements of officials versus recall-enabled replacements affect the decisions of officials in charge of public good provision. In our experiment, subjects earn money by performing a labour task and pay taxes according to their claimed income and face a given probability of getting audited and penalty schedule. Tax proceeds are used to fund a public good that is chosen by the group official. The official has the choice to fund a self-serving (and inefficient in equilibrium) public good or refrain the self-serving behaviour by funding a public good that benefits everyone equally and is more efficient (in equilibrium). The frequency of the self-serving public good choice is a stylized measure of corruption. Our data suggest that the recall-enabled replacement of officials has an important impact on limiting corruption behaviour but the resulting rate of turnover among officials is high which warrants awareness on other costs of this institution.[7]

[7] In practice, these other costs may include a loss of institutional knowledge due to high leader turnover and pecuniary costs and social costs associated with frequent recalls. Some of these costs will be tackled in the next chapter.

The chapter proceeds as follows. In the next section, we present the literature review. The theoretical construct and derivation of hypotheses are presented in section 2.3. Section 2.4 presents the experimental design. The empirical and experimental results are presented in sections 2.5 and 2.6, respectively. And the final section concludes.

2.2 Literature Review

Civilized societies have long been known for delegating the power to tax and to provide public goods to representatives. A large fraction of public spending, however, is not devoted to useful public projects, but rather to support projects of self-interested officials and other pork-barrel projects. The political process has been recognised by the economic literature to be a major factor behind this inefficient provision of public goods (Lizzeri & Persico, 2001). Representative democracies have been hailed as providing accountability between elected leaders and those who elect. However, democratically elected leaders are not immune to corruption as evidenced in countries as different as Zimbabwe, Venezuela, and the U.S. Accountability of elected officials through the ballot box is thought to curtail the use of public resources for personal gain, but to date, there has been limited empirical analysis of this conjecture.

Public officials are entrusted with decision-making functions, the provision of public goods to the community being an important one. Corruption can be manifested as an allocation of public funds to the provision of public goods that provide more benefit to officials at the cost of benefit to the general citizenry. In this chapter, we focus on

corruption as a phenomenon that involves public officials, other citizens, and the allocation of public-sector goods.[8]

The argument that different institutional frameworks can affect levels of corruption follows from opportunities, constraints, and incentives these frameworks provide on strategic interactions among involved agents. One such angle is the "career concerns" approach of Hölmstrom (1999). In this regard, there are numerous studies that argue that leaders who are not eligible for re-election act differently than those who are (Alt *et al.*, 2009; Besley & Case, 1995; Besley & Case, 2003; Ferraz & Finan, 2011). For instance, Alt et al. (2009) find that economic growth is higher and taxes, spending, and borrowing costs are lower under reelection-eligible incumbents than under term-limited incumbents. Ferraz and Finan (2011) show that, in Brazil, electoral rules that enhance political accountability play a crucial role in constraining politician's corrupt behaviour.

Lizzeri and Persico (2001) compare the composition of government spending under alternative electoral rules through a political-economy model where the provision of a public good is determined by the electoral incentives of office-seeking candidates. When candidates have the option of redistributing resources, public goods will be underprovided relative to the efficient outcome because benefits from the public goods cannot be easily targeted to groups of voters. In the same context, Persson and Tabellini (1999) construct a model of redistributive politics in which a majoritarian system generates less public good provision than a proportional system. Using cross-country

[8] Corruption may be carried out by others including bureaucrats but we do not specifically investigate those other channels in this chapter.

data, they find weak support for this prediction. This chapter contributes to this literature by proposing the absence of the right to recall as an explanatory variable for inefficiency of public good provision by government officials.

Concerning the emerging literature on laboratory experiments of corruption[9], Abbink et al. (2000; Abbink *et al.*, 2002) introduce reciprocity games that mimic situations where corruption arises. Specifically, they separate the influences of the three main characteristics of corruption, namely (i) reciprocity relationships between bribers and public officials, (ii) negative welfare effects, and (iii) high penalties when discovered, in their experiment. In their study, it is a third agent, a sudden death treatment, who may punish corrupt behaviour by others. On the contrary, in our study punishment of corrupt behaviour can be carried out by the citizens via the recall of the official and/or tax compliance, neither explicitly tested via a political process in Abbink et al. (2002).

Other research assumes that policymakers would act in the interests of those whom they represent simply because of the responsibility to do so by virtue of having been chosen to make decisions for others. Drazen and Ozbay (2014) present experimental evidence that policies chosen by leaders depend on whether they were elected or appointed. They find that elected leaders are significantly more likely to choose a policy not equal to their "type" than leaders who are appointed.

No study – to the best knowledge of the authors – directly examined the effect of citizens' right to recall an official during his/her term in office on corrupt allocations of

[9] For an earlier review of the literature, see (Abbink, 2006.).

the public good. This chapter bridges a gap within the literature using controlled environments and experimental methods to isolate effects of variables of interest (opportunity to recall in our study) on behaviour of decision-makers (prevalence of corruption in our study). We use a series of laboratory experiments to capture the reactions of "citizens" to "officials' behaviour", in different political settings, through a stylized official-citizen interaction over tax compliance.

We turn next to the theoretical analysis of our stylized model of corruption in the presence and absence of the recall option.

2.3 Theoretical Analysis and Derivation of Hypotheses

To elicit the relationship between the form of political system and corruption, we model it through a natural interaction between citizens and government—that of tax payment and the provision of a public good; all players (citizens and the official) make decisions regarding their tax compliance and the official decides how to use the taxpayer dollars. In the no-Recall game (noR-game) the official is randomly chosen and sits as the incumbent for one fixed term (with a known duration). In the Recall game (R-game) the citizens are allowed to recall the official after they have observed his/her decision on how to spend the tax proceeds. If a recall is voted for, a new official is chosen among the citizens. To disentangle the effect of recall-enabled replacement on official's behaviour (from the election effect), in both games officials are exogenously selected; they can be thrown out of office in the R-game but not in the noR-game.[10]

[10] In either game, we do not have elections per se as citizens do not have any control over who will come into office. This setting is close to Powell's (Powell, 2000.) classification with respect to voters' objectives

We model the interaction between citizens and officials with the following sequential stage game. In both political settings, players report their earned income which is used to determine income tax liability. It is common knowledge that with some probability, p_a, any player can get audited. An audited player pays tax on his actual earned (not on declared) income plus a fine; the fine is a convex and increasing function of unreported income[11]. A player who is not audited pays according to his declared (not necessarily true) income, *x*. Tax proceeds[12] are used to finance one of two available public goods; the G-good which favours the official at the expense of other citizens or the C-good, which benefits all players equally. The official makes the decision which public good to fund. Valuation of public goods across players is common knowledge. The valuation of the C-good is identical for citizens and the official whereas the valuation of the G-good is higher than the valuation of the C-good for the official but lower for the citizens. If we let β_i^j denote the marginal per capita return (mpcr) of *j*-good to *i*-player, valuation of public goods G and C across players is captured by the following set of inequalities,[13]

(*) $$\min\{\beta_o^G, 1\} > \beta_o^C = \beta_c^C > \beta_c^G \geq 1/(n-1)$$

---

at election time and which makes voters use elections to reward or punish incumbents, instead of using elections to choose between prospective teams of future policymakers.

[11] See appendix C for more details.

[12] Penalties do not go into the public pool of funds; they go to cover administrative costs of auditing and are considered a loss. The G and C goods are produced at the same constant marginal cost.

[13] Another way to think of payoffs from the G-good is a transfer of $\left(1 - \frac{\beta_c^G}{\beta_c^C}\right) T$ to the official's account (which captures rent extraction) and use the remaining of the tax proceeds, $\left(\frac{\beta_c^G}{\beta_c^C}\right) T$ to fund the C-good. In this interpretation, (which is payoff equivalent for citizens to the one above with two public goods) there is only one public good to be funded that is equally valuable to everyone (think of defence) but the official makes a decision on how much of the total tax revenue T goes to funding it (while the rest is appropriated by the official).

where n is the number of players; subscripts are used for player's type (c for the citizen and o for the official) and superscripts for the type of public goods (G for the G-good and C for the C-good). The social dilemma follows from the lower bound 1/(n-1) and the upper bound 1 on citizen's mpcrs. The official's decision on which public good to fund is made known to all and payoffs are realised. In the R-game (but not in the noR-game) the stage game continues with the citizens voting on whether to recall the official.

An official who uses office for private benefits would choose to fund the G-good as own return from the G-good (β_o^G) is higher than the return from the C-good (β_o^C) although the funding of the G-good is less preferred by the citizens. This captures in a stylized way some version of legal corruption. The frequency of the G-good being funded will be one of the measures of corruption. To measure the effect of the recall option on economic efficiency and fairness of redistribution of tax proceeds through public good provision we will look at the common measure of efficiency (the ratio between the realized group payoff and the maximum feasible group payoff) and payoff equity (Gini index of the distribution of payoffs) across the two games (R-game and noR-game).

The main question of interest is whether recall-enabled rather than scheduled replacement of officials is a more effective institution in hindering corruption. There is no a priori clear yes/no answer to this question as non-corrupt officials can also be thrown out of office if craving for political power is widespread among voters; if so a recall-enabled institution offers little incentive to officials to behave as socially intended.[14] Theoretically, the level of corruption is expected to be the same in both games if one

[14] The supermajority rule is preferred to the simple majority in protecting non-corrupt officials. It is also superior to the unanimity rule if "vote buying" is added to the equation as a corrupt official would need to "buy" one vote to survive a recall.

appeals to subgame perfect equilibria (SPE). However, in other Nash equilibria (not SPE) with players using "maxmin" actions (to punish corruption and tax evasion) out of the equilibrium path, the predictions are more/less corruption in the R-game than in the noR-game depending on whether recalling the official is part of the strategy profile when the game approaches the end (see part 2 of the main results below). The intuition behind this result is that the official in either game funds the C-good as long as the instantaneous benefits from corruption (funding of the G-good) are smaller than future losses that occur as a result of the corruption triggering low compliance in both games and recalls in the R-game. But while the instantaneous benefits are the same across the two games the future losses differ as the likelihood of being in the office (and therefore expected payoffs) after funding the G-good are different across the two games. In the following, we will state the equilibrium analysis of the two games (details in Appendix A) and use laboratory data to obtain further insights on the empirical validity of theoretical hypotheses.

The following notation will be used: w is the individual's income, t is the tax rate, p_a and $f(.)$ are the auditing probability and the fine (a convex increasing function) on unreported income. If the likelihood that G-good is funded is p^G then the expected mpcr of the public good to individual i is: $E_i(\beta|p^G) = \beta_i^G p^G + \beta_i^C(1-p^G)$. Letting x_{-i} denote the vector of declared income by others, player i's expected payoff in the stage game from reporting x_i (when the real income is w)[15] is

$$E(\pi_i(x_i, x_{-i}, p^G)) = w - y_i - p_a f(w - x_i) + (T_{-i} + y_i)E_i(\beta|p^G) \qquad (1)$$

[15] For simplicity we assume homogenous income and that decision of how much to work are not part of the problem of our decision-maker. Since the optimal strategies have the dominance property these assumptions are innocuous.

where T_{-i} is the expected total tax paid by others and $y_i = \tau(p_a w + (1 - p_a)x_i)$ is the expected payment by individual *i* as income tax.

It follows from the linearity in the public good payoff specification that the optimal declared income is in dominant strategies. But unlike in linear public good games, full free riding (that is, declaring 0 income) is not optimal for penalty functions that are sufficiently convex. It follows from partial free-riding (through partial tax compliance) and statement (*) that in equilibrium under provision of public goods is expected. As the optimal free-riding decreases in the mpcr in our games, the higher the corruption the lower the public good provision.

The outcomes of the subgame perfect equilibrium in either game (see Proposition 1.1 and 2.1 in Appendix A) are underfunding of the G-good which is the only public good being funded; in addition, in the Recall game the officials are always thrown out.

The subgame perfect equilibrium builds on the Nash equilibrium of the stage game. However, in our games players' payoffs in the Nash equilibrium of the stage game are larger than the minmax payoff.[16] Hence, there are Nash equilibria (not SPE) in which players' payoffs are close to any strictly enforceable payoff profile if the game is played long enough. In such equilibrium with grim punishing actions being triggered by corruption or free-riding, there exists an r* such that C-good is funded during the first r* rounds of the game and the G-good is funded during R-r* end rounds, R is the total number of rounds the stage game is played. The number of rounds without corruption, r*,

[16] If we let x^G denote the vector of optimal declared income when the G-good is funded (i.e, p^G=1) then in the Nash equilibrium of the stage game the payoff of individual *i* is $\pi_i(x_i^G, x_{-i}^G, 1)$ which is larger than the minmax payoff, $\pi_i(x_i^G, 0,1)$ in which the official funds the G-good and every player but *i* declares 0 income; the expected difference of the two payoffs is $\beta_i^G(1 - p_a)\tau \sum_{j \neq i} x_j^G (> 0)$.

varies with the length of the service term (i.e., the value of R), but the number of end rounds with corruption, (i.e., the value of R-r*) does not. The number of end rounds in which the G-good is funded is determined by the ratio between the instantaneous benefit (the round additional payoff) that the official earns by making self-serving decisions and the future losses (the difference between the payoff he gets by not defecting and the minmax payoff in any following round): the larger the future losses (for e.g., the larger the fraction of voters that engage in punishing the official) the smaller the number of end rounds with corruption, R-r* (See Appendix A). In the R-game, there are similar Nash equilibria in which the official is recalled if he funds the G-good during the no-corruption rounds. In such equilibria the number of end rounds with corruption is (weakly) smaller than in the noR-game if the recall option is not exercised during the end rounds (with corruption). If the recall option is exercised during the end rounds then the recall-enabled replacement institution cannot be superior to the scheduled replacement in delaying corruption. There are many such Nash equilibria; which one is played out is an empirical question. Nevertheless, theoretical analysis shows that whether recall-enabled replacement (compared to the scheduled replacement) is a better institution in hampering corruption depends on strategies used during the end of the game. This may explain why we see both institutions across countries.

Theoretical predictions of both SPE and equilibria with trigger strategies across the two games are summarised in the following main result[17].

[17] Note that we assume risk neutrality and that players' preferences on the payoff space are represented by equation (1) above.

Main Results:

1. SPE predict full corruption in both games.
2. There are Nash equilibria with punishing (grim) strategies out of the equilibrium path that predict no corruption in all but the end rounds. The predicted number of end rounds with corruption is:
    a. *Lower* in the noR-game than in the R-game for strategy profiles that *recall* officials during the end rounds.
    b. *Higher* in the noR-game than in the R-game for strategy profiles that *do not recall* officials during the end rounds (i.e. when recall is exercised only after defections during the non-end rounds).
3. Inefficiency of public good provision increases with corruption.

Proof: See Appendix A.

Our first hypotheses that follow from the outcomes of SPE stated above and part 3 of the proposition are:

H1o: Corruption level is the same across the two institutions.

H2o: Inefficiency of public good provision is similar across the two institutions.

In the R-game, "always recall" the official is part of a SPE (see Appendix A, result P2.1) so we have the third null hypothesis

H3o: The likelihood of a recall does not depend on official's behaviour.

The alternative hypotheses that follow from Part 2 and 3 of the Proposition are:

H1a: Corruption level differs across the two games.

H2a: Inefficiency of public good provision is different across the two games.

The one-sided alternative hypotheses for the Nash equilibria of type 2.a (2.b) above are higher (lower) corruption and inefficiency of the public good provision in the R-game than in the no-R game.

In the R-game, in (both types 2.a and 2.b) Nash equilibria with trigger strategies, a funding of the G-good by the official during the non-end rounds of the game triggers recalls. Hence, the one-sided alternative hypothesis to H3o is

H3a: Funding of the G-good affects positively the likelihood of recall.

We turn now to an explicit discussion of the experimental design.

2.4 Experimental Design

The experimental design that we report here is a 2x1 design implemented across subjects.[18] In both settings, subjects are randomly matched into groups of five at the beginning of the experiment; groups remain fixed during the entire experiment. At the

[18] The instructions (in Arabic) were distributed in hardcopy to the subjects to ensure that subjects could refer to them at any time during the experiment for information on the audit rate, penalty structure, the value of the two public goods to officials and citizens and other details. Instructions are included in Appendix B.

beginning of round 1, an initial official is randomly selected. Subjects earn experimental pounds[19] according to their performance in a simple task of correcting spelling mistakes in the Arabic language. After the earning money task is completed, subjects decide how much income to report; the reported income is taxable at the rate of 25%.[20] No taxes are paid on unreported income unless a subject is audited; an audited subject, in addition to paying taxes on earned income, pays a penalty on any undeclared income determined by a known penalty structure; one out of the five members is randomly selected to be audited.[21] Total taxes paid by all subjects are used to fund one of two feasible public goods as being decided by the official of the group. The mpcr of the C-good is 0.6 for any member of the group, whereas the G-good is valued most by the official (mpcr=1.5) but less so by citizens (mpcr=0.375).

To capture non-excludability and non-rivalry characteristics of a public good, we follow a standard implementation in the experimental literature that distributes some multiple (3 for us) of the total individual investments in the public good (i.e., total tax revenue in our games) among group members. In case of the C-good, tripled tax revenues are equally distributed among group members; in case of the G-good, half of the amount goes to the official whereas the remaining half is distributed equally among the other group members, i.e., the other four citizens. Thus while the C-good is valued the same across group members, the G-good provides more benefit to the official at a cost of reduced benefit to the citizens--what we call a "corrupt" decision. The net of the round's

[19] Accumulated payoffs in experimental pounds were converted at the end of the experiment into Egyptian pounds.

[20] All subjects in our experiment knew that they faced the same tax rate as all other subjects.

[21] Penalties are not added to the public fund and are therefore considered wasted resources.

earnings for each subject is then calculated (earned income minus taxes less penalties (if audited) plus the payoff from the public good chosen by the official). One full term in office lasts for seven rounds and the whole experiment consists of 14 rounds.

The two experimental settings differ as follows. In the no-recall treatment the official remains in power for seven rounds whereas in the recall treatment the group members are allowed to vote for a recall-replacement at any round out of the seven rounds. If the majority of members (including the official)[22] vote for a recall, the computer randomly chooses a new official from eligible members.[23] After the first seven rounds, a new official is randomly selected in the no-recall treatment, and the experiment continues for seven more rounds (i.e., until the 14th round); in the recall treatment a random selection of an official takes place only if the initial official was never recalled for seven rounds. Several studies (for example, Blume & Sobel, 1995; Crawford & Sobel, 1982; Farrell & Gibbons, 1989) find that communication can affect behaviour. Therefore, after the tenth round in both treatments we allow subjects for a "cheap talk" chat via text messages within the group members. Subjects were not allowed to communicate with one another during the experiment other than the chat allowed after round 10.

After completion of the main experiment, subjects completed a post-experimental online questionnaire (see Appendix D) that included questions designed to get information about idiosyncratic individual characteristics such as attitudes toward risk,

[22] This is our implementation of supermajority as the majority here is the same as three out of four citizens voting to recall the official. As an official would not vote to recall himself (confirmed in our data as 98.21% of our "officials" did so), in the instructions we elected to go for allowing the official to vote as well and implement the majority rule as this was easier to explain to subjects.

[23] A group member is eligible if he has not been a subject of recall elections during the last three elections.

views regarding the performance of political institutions, gender, religion, academic performance, etc.

All 120 subjects (60 subjects in each treatment; each session was run with 30 subjects) who participated in the experiment were volunteers from undergraduate classes at Cairo University. The experiment was conducted in March 2013, three months before the ousting of Egypt's first democratically elected president, Morsi. Each subject participated only once in the experiment. At the end of the experiment, subjects were paid for all 14 rounds and the total earnings were typically between \$26.00 and \$60.00[24]. The experiment lasted approximately two hours, and it was conducted in Arabic. Both treatments were conducted in the Laboratory of the Faculty of Economics and Political Sciences at Cairo University.

2.5 Empirical Results

Before we report subjects' behaviour, it will be helpful to look at incentives for corruption across the two games given parameters used in the experiment.

We begin by noting that the maximum feasible payoff for a group is EP150. For optimal claims of income given the type of public good funding, if the tax proceeds go to fund the C-good then the round payoff is EP27 for everyone, whereas under corruption (G-good funding) the round payoffs are EP32 and EP21 for the official and the citizen, respectively. Thus, funding C-good offers not only more fair redistribution of tax proceeds but also higher efficiency as optimal claims are higher: economic efficiency is

[24] At the time the experiment was run, the exchange rate was: 1 USD = 6.78 EGP. The subjects' earnings were between 180 EGP and 406 EGP. An average hourly rate is 33 EGP (CAPMAS, 2013.). Thus each subject earned at least twice what he could have earned outside the lab per hour.

90% (=135/150) in case of the C-good and down to 77% (=116/150) if the G-good is funded. Yet, the round payoff is EP5 higher for the official if the official decides to fund the G-good.

Next, in a two-terms of service situation (two parts in our experiment, each with 7 rounds), a norm of corruption might be tempting in the scheduled replacement treatment as the expected payoff to an official is EP386 which exceeds the expected payoff of EP378 from no corruption (C-good always funded). A 'norm' of corruption is less tempting in the recall-enabled replacement treatment as a recalled official needs to wait for three elections before he becomes an eligible member for office, so subject's expected payoff under a 'norm of corruption' is bounded from above by EP338 which is smaller than expected payoff of EP378 if the norm of no corruption is in place.[25]

The SPE predicts full corruption in either institution. Given the parameters used in our experiment, the Nash equilibria of type 2a reported in the Main Result also predict full corruption (in both games) as seven rounds are not sufficient to support rounds with no corruption: the round gain is 22.5 whereas any future round comes with a loss of 3.5, hence the predicted number of rounds with corruption is 7. Nevertheless, for equilibria of type 2b (that restrain from recalls during the end of the game) seven rounds are enough to support rounds with no corruption in the recall-enabled replacement treatment as the round gain remains the same, 22.5, but the future round loss is almost tripled, 9.34; so the predicted number of end rounds with corruption in the R-game is 3. If so, then the frequency of corruption is between 43% and 100% (depending on whether recalls are utilized during the end-rounds) in the R-game and 100% in the noR-game. So, given the

[25] EP386 (=7*32+7(32/5+21*4/5)), EP378 (=14*27) and EP338 (=10*21+4*32).

parameters used in our experiment, the alternative hypotheses H1a and H2a are one sided as folows:

H1b: Corruption level is higher in the scheduled replacement than recall-enabled replacement treatment.

H2b: Inefficiency of public good provision is higher in the scheduled replacement than recall-enabled replacement treatment.

Finally, if the C-good is funded more often in the recall treatment (H1b) then payoffs are more equal across group members because they all get equal returns for the public good. In addition if corrupt officials are often recalled then in case of G-good provision each player earns (the high) official's payoffs in some rounds and (the low) citizen's payoffs in others. Thus, it follows that:

H4 (inequity): Inequality of final earnings is negatively affected by the recall option.

2.6 Experimental Results

Of the 60 subjects who participated in the no-recall treatment, 40 (67%) subjects never served as a group official, 16 subjects (27%) served as group officials for 7 rounds, and 4 subjects (7%) served for 14 rounds. In the recall treatment, on the other hand, of the 60 subjects, there were 6 subjects (10%) who never served as officials, 5 (8%) subjects served for 7 or 8 rounds, and no subject served for 14 rounds; half of the subjects (30) served as group officials for 2 or 3 rounds.

Figure 2.1: Histogram of recalls

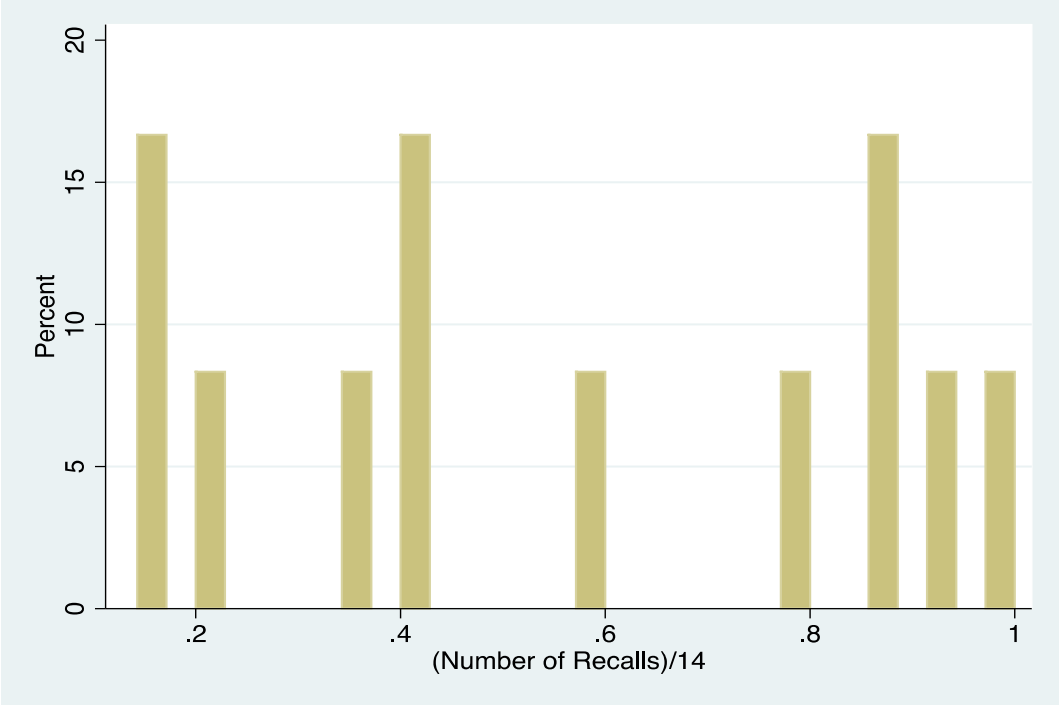


Figure 2.1 shows empirical distribution of recalls across 12 groups; the mean likelihood of a recall is 56% (standard deviation=0.498). Clearly our subjects weren't shy of exercising the option to recall the group official but the 56% is a far cry from 100% rate of recall predicted by a SPE (hypothesis H3o). So what determines the likelihood of a recall?[26]

Recall and corruption. If an intrinsic need for power is the main driver of a recall then we expect to see that the likelihood of recall does not depend on an official's choice (C or G); a result that would be consistent with the SPE. On the other hand, and according to NE that are not SPE, a corrupt official can trigger recalls in the R-game;

[26] To vote an official out of office requires at least three votes. We can safely rule out that the high rate of recall is a result of trembles/ noise (such as subjects submitting 'recall' when they meant to submit 'do not recall').

meaning that we should expect no recalls of non-corrupt officials during the non-end rounds of the game (end-rounds as well for type 2.b equilibrium). Examining the data at the aggregated level, however, we found that the empirical likelihood of a recall is 16.28% following a C-good and almost six times as high, 97.56% following a G-good funding. Moreover, by classifying groups into two categories: committed (6 groups that recalled fewer than half of their officials) and volatile (6 groups that recalled more than half of their officials), we found that: (i) the likelihood of recalling non-corrupt officials is a high 41.67% (100% for the corrupt officials) among volatile groups and a low 6.45% (90.91% for corrupt officials) for committed groups, and (ii) the corruption level is 2.7 times higher in the volatile category: 71.43% (volatile groups) and 26.19% (committed groups). So, although there seems to be some intrinsic need for power exhibited among volatile groups, the effect of corruption seems to be stronger. Indeed probit regression (with clusters at group level) supports the hypothesis that corruption is the main cause of recalls: the estimated effect of a dummy variable that takes the value of 1 (0) when the G-good (C-good) is funded increases the likelihood of a recall by 81% (robust standard error = 0.057, p-value=0.000).[27] We conclude that our data reject the null hypothesis H3o in favour of the alternative hypothesis H3a.

Result 1: *Corruption, and not an intrinsic need for power, is the main cause of recalls.*

[27] A linear regression (with clusters at the group level) with dependent variable the number of votes for recall tells a similar story. The estimate of the G-good being funded is 2.40 (robust std.err.=0.264, p=0.000, R^2=0.663), that is, funding G-good increases the number of votes in favour of a recall by 2.4, which for the group size of five and the majority rule results in the official being voted out of office. There is no round effect, nor any chatting effect, on the number of votes in favour of a recall.

The strong effect of corruption on the likelihood of a recall brings to the forefront the question of the interaction between political institutions and the level of corruption. The data from the end game (round 14) supports the hypothesis that it is the threat of recall followed by ineligibility to serve as an official for at least three rounds that may sway officials to fund the G-good less often in the recall treatment. In the last round of the experiment (when the recall comes with no consequences) we observe that 83% of the officials fund the G-good which is not statistically different (Pearson chi2(1)=0.25, p=0.615) from behaviour of officials in the no recall treatment: 75% choose to fund the G-good in round 7, the last round before a scheduled official replacement in the no recall treatment takes place.[28] On the contrary, for round 7 (which is not the end of life in office for 83% (10 out of 12) officials in the recall treatment) only 33.33% of the officials decided to fund the G-good (Pearson chi2(1)=4.20, p=0.041).

Overall there is less corruption in the recall treatment. With groups as the unit of observation, we find that the mean of the distribution of frequencies of G-good until the chatting event is 63% (95% confidence interval is (0.41, 0.86)) in the no recall treatment and down to 46% (95% confidence interval is (0.27, 0.64)) in the recall treatment. To capture the evolution of "corruption" at a group level, we construct a new variable, "Time Frequency of G-good (TFG)". The value of the new variable at round *t* for group *i* is the ratio of the total number of times that the G-good is funded up to round *t* and the value of *t*. This variable will be used in the statistical analysis of the determinants of corruption

[28] Data from round 14 in the no-recall treatment are less informative for comparison as we find a strong effect of communication (after round 10) in the No-Recall treatment but not in the Recall treatment. Further study is warranted to investigate the interaction between communication and officials' behaviour.

reported below, but to get an overall impression of the effect of the Recall option on the frequency of corruption over time Figure 2.2 shows TFG values for the two treatments.[29]

A visual inspection of Figure 2.2 suggests that: (i) the prevalence of corruption is negatively affected by the Recall option (as the Recall (dotted) line is everywhere (but at the very beginning rounds) by at least 10% below the no Recall (solid) line), (ii) subjects in the recall treatment learn quickly (as early as round 3) to fund the G-good less often but after that behaviour seems stabilised, (iii) chatting (after round 10) seems to have a positive effect on reducing corruption in the no recall treatment but not in the recall treatment and (iv) there is a persistent upward trend in the frequency of corruption in the no recall treatment until the chatting event.

We turn our attention to finding out which of the features above survive statistical significance criteria. The use of probit model with clusters at the subject level is warranted as we have more than one observation per subject serving as a group official. The dependent variable is a dummy that takes the value of 1 (0) if the group official decides to fund G-good (C-good). In the list of regressors that are expected to affect the official's decision are the frequency of G-good being funded in the official's own group at the time of decision (TFG), whether in the preceding round the official funded C-good and remained in office (C&In), the opportunity to communicate via a chatting event (Chatting) and, in model 2, we add additional regressors that control for individual idiosyncratic characteristics such as gender, religion, etc.

[29] Data points at each round correspond to the averages of the TFG across groups at a given treatment.

Figure 2.2: Time Frequencies (at group level) of G-good being funded

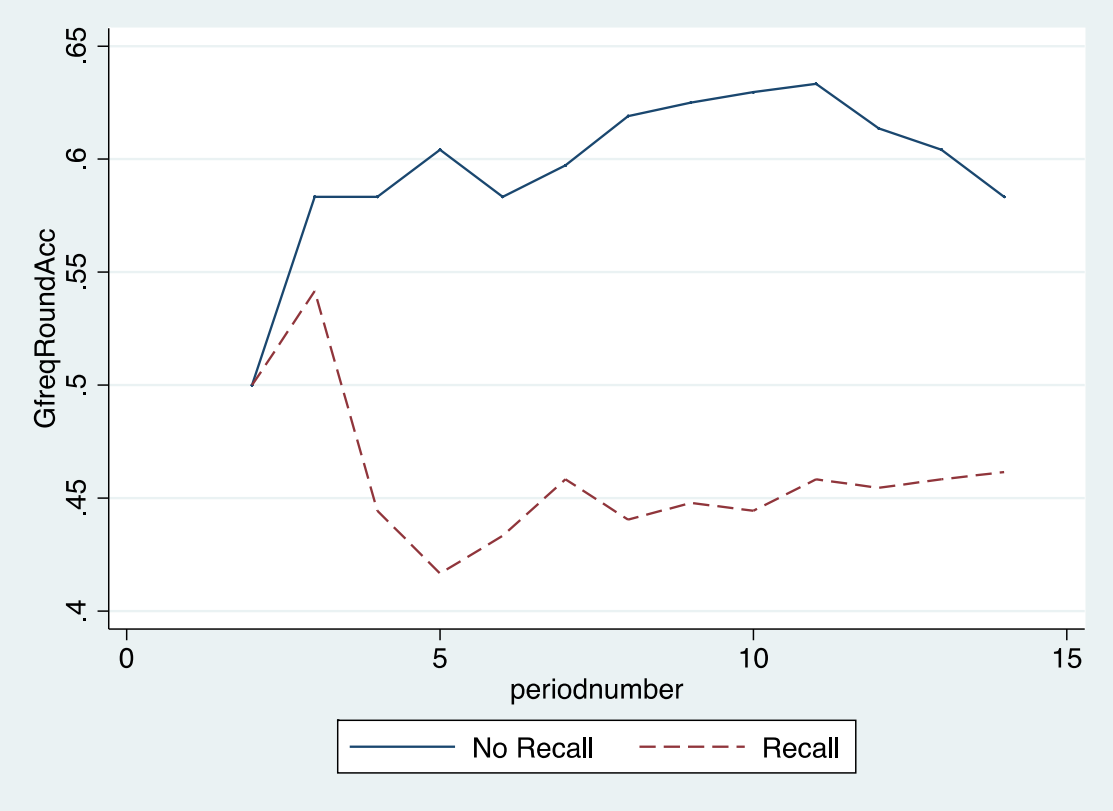


Table 2.1 reports estimated marginal effects (p-values in brackets) of the regressors. Estimates reveal that previous level of corruption is positively associated with officials' self-serving choice of funding G-good: 31.6% increase in the likelihood of corruption (p=0.057). Variables that are negatively correlated with corruption include retaining a non-corrupt official (the event of a C-good provision and the official not being recalled) in the preceding round (-26.3%), being a Muslim in the recall treatment (-23.7%) and good academic performance (-25.1%).

To get some information on the association between the two types of institutions and the level of corruption we used the pooled sample and added two dummy variables

for the No-Recall treatment: one captures additional chatting effect whereas the other measures the overall effect of taking away the Recall option on the observed likelihood of G-good funding. Our data support the conclusion that in the absence of Recall option the likelihood of corruption goes up 13.7% (one-sided p=0.04). Our data reject the null hypothesis H1o in favour of the alternative hypothesis H1b.

Result 2: *The level of corruption is lower if citizens are allowed to recall the official.*

Allowing chatting among group members has no significant effect on the likelihood of corruption; however, in the absence of Recall, communication lowers the likelihood of corruption by almost 38.7%.[30]

[30] The persistency of the effect of communication on corruption remains a question for another study; our design is not well-suited to address it as the experiment continued only for four rounds after the chatting.

Table 2.1: (Marginal Effects) Probit regression of G-good Funding

	Recall Data		All Data		
G-good Funding (D)	(1)	(2)	(1)	(2)	(3)
C-good & no Recall (C&In preceding round)	-0.263**	-0.245**		-0.243**	-0.236**
	(0.034)	(0.049)		(0.029)	(0.030)
Time Frequency of G-good (lagged)	0.316*	0.361*	0.641***	0.407***	0.369***
	(0.057)	(0.057)	(0.000)	(0.002)	(0.009)
Chatting (D)	0.109	0.119	0.122	0.112	0.102
	(0.127)	(0.111)	(0.121)	(0.122)	(0.168)
Demographics					
Female (D)		-0.138			-0.085
		(0.197)			(0.334)
Muslim (D)		-0.237**			0.019
		(0.041)			(0.886)
Single (D)		-0.018			0.086
		(0.919)			(0.643)
Junior and up (D)		-0.135			-0.125
		(0.313)			(0.167)
High GPA (D)		-0.251***			-0.223***
		(0.008)			(0.003)
Treatment Effects					
Chatting No Recall (D)			-0.386**	-0.344**	-0.387***
			(0.014)	(0.017)	(0.009)
No Recall (D)			0.147*	0.154*	0.137*
			(0.085)	(0.053)	(0.081)
Nr. Of Observations	156	156	312	312	312
Nr of Clusters	54	54	74	74	74
R^2	0.127	0.189		0.168	0.200
Log-likelihood	-94.40	-87.67	-184.4	-179.4	-172.4
Obs. P	0.487	0.487	0.532	0.532	0.532
Predicted P	0.483	0.484	0.539	0.538	0.538

Finally, we look at the inefficiency of the public good provision across the two treatments. The average inefficiency of public good provision is 15.22% in the no recall treatment and 22.63% in the recall treatment. According to the Kolmogorov-Smirnov test, data rejects the null hypothesis, H2o of similar inefficiencies of public good provision across the two treatments.

Result 3: *Inefficiency of public good provision is higher if citizens are allowed to recall the official.*

As the inefficiency of the public good provision is determined by tax compliance, we'll have more to say about this in the following paragraph.

Economic consequences of the Recall Option. An expected economic consequence of a lower level of corruption in our experiment is lower income inequality.[31] The range of payoffs in the Recall treatment is [239, 405] which is a strict subset of the range of payoffs in the No-Recall treatment, [213, 550]. The Gini index in the No-Recall treatment is twice the index in the Recall treatment: 10.3% (No-Recall) and 5.1% (Recall). Figure 2.3 shows estimated kernel densities of the distributions of final earnings in the two treatments (the solid line shows data from No-Recall treatment whereas the dashed line correspond to data from Recall treatment). The null hypothesis of final earnings in the two treatments coming from the same distribution is rejected by Kolmogorov-Smirnov test (p=0.028).

Result 4: *The Recall option has a positive effect on income equality*.

Lower income inequality can also result from a high frequency of recalls; if so then lower inequality might not be that desirable as frequent recalls signal cabinet instability. To test whether the high recall is the main cause of the low earning inequality, we look at data from the Recall treatment and compare equality of earnings' distribution of subjects from groups with Recall frequencies below 50% (dash-dot line in Fig.2.3) and above 50% (short-dot line in Fig.2.3). The null hypothesis of earnings in these two

[31] Income is measured as the final earnings, i.e., income after tax and transfers.

categories being drawn from the same distribution is not rejected by Kolmogorov-Smirnov test (p=0.236). We conclude that:

Result 5: *Low corruption and not high rate of recalls is the main cause of low inequality of earning distributions.*

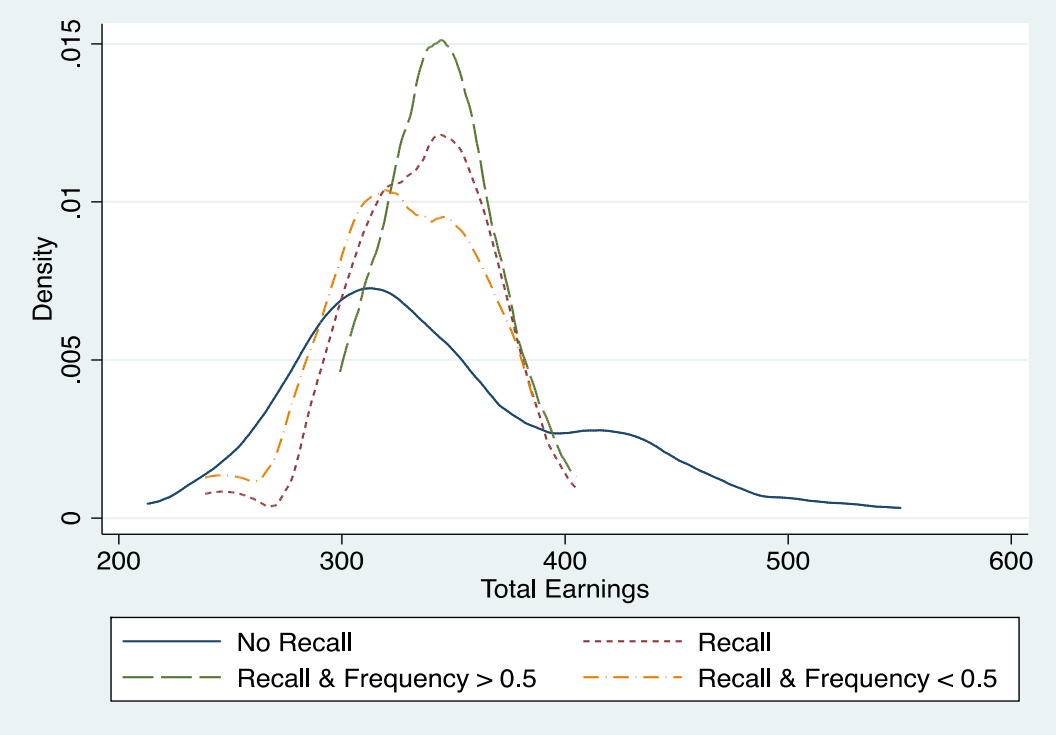
A remaining question is whether the lower inequality of income distribution in the Recall treatment comes at a cost of lower economic efficiency, which is measured as the ratio of the realised earnings and the maximum possible earnings. We find that realised efficiency is 82.22% in the no-recall treatment and 79.91% in the recall treatment; Kolmogorov-Smirnov test doesn't reject the null hypothesis of equal distributions of efficiency across the two treatments (p=0.403).

Result 6: *Economic efficiency is similar across the two institutions, with and without the Recall option.*

Our data do however reveal higher wasted resources through higher penalties in the Recall treatment (26.79, 95% CI (12.63, 24.51)) than in the No-Recall (18.57, 95% CI (19.50, 34.08)); the null hypothesis of equal penalties across treatments is rejected in favour of the alternative hypothesis of (p=0.067 (t-test)).

Result 7: *Recall option has a positive effect on wasted resources through penalties.*

Figure 2.3: Estimated Kernel Densities of Final Earnings



Allowing citizens to recall the official seems to provide incentives for officials to limit the use of office for private benefits but, paradoxically, at the same time it encourages lower compliance rates. What could explain these perverse patterns? Some thought exercises are in order: (i) a thrown out of office official can retaliate by contributing less to the public fund, and he can do so through low compliance, and (ii) low level of corruption can be sustained by the use of punishing strategies (such as minmax actions). One might expect that type (ii) reasoning should be more pronounced in the No-Recall treatment as there low compliance is the only tool to discipline the official but the problem is that it is also more costly to do so than in the Recall treatment.[32] To see whether type (i) reasoning has any validity we looked at our data: the

[32] Take for example using minmax strategies (that punish the official) in three sequential rounds: the payoff to a citizen in the No-Recall treatment is 5.6(=3*15/8) whereas in the Recall treatment is four times higher, 26.25 (=2*15/8 (out of the office) + 22.5 (in the office)).

mean compliance rate of a citizen who was previously an official and was recalled is 70.9 percent whereas it is 79.7 percent for officials in office (not recalled). The difference is significant at the 5 percent level. This suggests support for the retaliation hypothesis.

2.7 Conclusion

Can political institutions impact corruption? In this chapter, we find experimental evidence to suggest that indeed, the type of institution *can* have a limiting effect on the level of corruption in government. Through a laboratory experiment run in Cairo, we differentiate officials' behaviour regarding the use of public funds in situations that allow "citizens" to recall the official or not. In cases where officials take a "corrupt" decision (by choosing to use public funds in a public good that benefits themselves and reduces the benefits to other group members—G-good), there is a substantially larger chance of a recall than when the official has taken the more equitable decision (C-good). In addition, we find evidence that the culture of corruption is quickly affected by the recall treatment. We find that the prevalence of corrupt decisions falls early and significantly in the experiment in the recall treatment. In the no-recall treatment, there is an upward drift in the prevalence of corruption until subjects chat. The recall environment also shows promise for increased social stability by the correlation we find with equity in the post-experiment distribution of income.

There is significant policy relevance of these findings especially considering the number of nascent democracies resulting from the Arab Spring Uprisings. Corruption has been hailed as one of the primary reasons for toppling these governments. The practical limitations and complications of establishing new representative democracies have

become painfully obvious in countries including Egypt, Tunisia, Libya, and Yemen, among others. In many countries the definition and practice of representative governance will be years in the making. In the meantime, the results of this experiment strongly suggest that citizens' ability to censure their leaders (through recall) can reduce corruption, and is therefore an important lever to consider in the development of new political processes.

Chapter 3

The 'Right to Recall' and Tax Compliance:

Experimental Evidence

3.1 Introduction

One of the driving forces behind the eruption of the 2010-11 revolutions in Arab Spring Countries, in general, and Egypt in particular, is the deteriorated economic situation and living conditions of the majority of the population. A multidimensional reform process is, thus, inevitable for the new governments of these countries to build a modern society with high growth prospects. Managing fiscal policy effectively in this transition period requires a clear picture of the main factors affecting tax compliance behaviour of citizens in these newly democratised societies. Tax compliance directly affects the government's ability to raise own source revenues which is a crucial requirement for a country's long term fiscal sustainability. This in turn allows governments to engage in thoughtful long-term planning and budgeting—all of which support the growth and development of nations.

Tax evasion is a serious phenomenon for a number of reasons. It decreases tax revenues, thereby affecting citizens' receipt of public goods and services. It affects the

accuracy of macroeconomic statistics. It has a negative impact on social capital through its negative effect on citizens' respect for the law, trust in government institutions, and feelings of unfair treatment. Moreover, taxpayers' altering of behaviour to evade taxes leads to misallocation of resources (Alm, 1999a; Alm *et al.*, 2004; Andreoni *et al.*, 1998; Cowell, 1990; Slemrod & Yitzhaki, 2002).

Since 2011, Egypt could be argued to have exercised the right to recall its rulers twice in less than three years (removing Mubarak in 2011 and Morsi in 2013), albeit however through mass demonstrations rather than a formal constitutional path. And in both cases, corruption charges were among the demands of the protesting masses. In fact, as per the new constitution of Egypt, approved in January 2014, the right to recall the president has been enshrined as a constitutional right – probably for the first time in a semi-presidential system.[1] In a new democracy where voting in free elections is a newly acquired right, it is likely to be much more appreciated and thus also more significant – when compared to established democracies where such a tool is an everyday practice – to affect tax morale and hence subsequently tax compliance.

Indeed, there are many ways by which citizens can interact with their governments. They may vote for candidates and in the process be treated to public forums regarding the candidate's viewpoints and plans. Alternatively, they may simply accept decisions of their leaders with little direct input but avail themselves with alternative means to display support or displeasure with these decisions. Taxpayer compliance is one mechanism that citizens have at their disposal to express reactions to

[1] According to article 161, a two-thirds majority of parliament can initiate a motion to withdraw confidence from the president. Such a motion, however, has to be approved by the electorate in a public referendum. If rejected, the president remains in office and parliament is automatically dissolved.

their governments (Alm *et al.*, 1993; Alm *et al.*, 1999; Frey, 1997; Pommerehne & Weck-Hannenmann, 1996).

This chapter examines – through a lab experiment – the effects of empowering citizens with the right to recall government officials on citizens' tax compliance behaviour[2]. Using novel treatments of governance, I allow subjects in groups of five to make decisions regarding their tax compliance and allow one subject in the group (as an official) to decide how to spend the collected tax revenues. Specifically, subjects are first faced with a typical tax compliance decision: they earn income, they must decide how much to report as taxable income- knowing that there is some probability that they will be caught and penalised if they under-report- and they receive a return for their taxes in the form of public good earnings that depends upon the level of group tax payments and the public good chosen by the official. In one treatment, the official is chosen by the computer at the beginning of the experiment and sits as the incumbent until the middle of the experiment (i.e. till the end of round 7) when the computer chooses a new official for the remaining seven rounds. In the second treatment, the citizens are allowed to recall the official at the end of each round after he/she chooses how to spend the public funds. If a recall is voted for by a majority of the voters, the computer chooses a new official. The aim is to test the effect of having frequent elections, through citizens' right to recall officials, on tax compliance behaviour of citizens.

[2] This is because despite having the results from the previous chapter suggesting an important impact for the right to recall officials on limiting corruption behaviour, the resulting rate of turnover among officials was high which warranted awareness on other costs of this institution, like lower tax compliance for example.

I find experimental evidence that tax compliance is significantly lower in the environment where citizens are empowered with a 'right to recall' government officials. My result suggests that the constitutional introduction of the right to recall in newly democratised countries could have detrimental economic effects.

The experiment has been conducted in March 2013 in Egypt, with subjects being volunteers from undergraduate classes at Cairo University. Egypt is an interesting country to test this hypothesis as it is the most populous Arab Spring Country and traditionally the most influential in the region. It has a population of 82.5 million, unemployment of 12.3%, GDP of $272 billion, and a budget deficit of 12% of GDP (International Monetary Fund, 2014). Government spending is 32% of GDP in 2014. Any individual employed in Egypt (be it public or private) pays a monthly withholding tax rate based on his/her salary, with the self-employed falling under a self-filing system. The top individual income and corporate tax rate is 25%, and according to the 2014 index of economic freedom, the tax burden is 13.8% of GDP. In the financial statement of the Government of Egypt budget plan for the year 2014/15, tax revenues are estimated to reach 15.2 percent of GDP, a figure well below world averages of 35.6 percent in developed countries, 25.5 percent in emerging markets, and 22.8 percent in low-income countries (The Ministry of Finance, 2014). This stresses the significance of my study in trying to have a well-specified understanding of the factors that might be influencing the tax compliance behaviour of taxpayers in the new democracies of the Arab Spring countries in general, and Egyptians in particular. The findings of this study are aimed at bringing scientific methods to bear on the formulation of advice on questions of policy,

through providing some evidence of the tax compliance behaviour of Egyptians to the government at this critical transitional period.

Conducting this research via lab experiments is useful for the following reasons: (i) it provides a good instrument to analyse limitations and possible extensions of alternative theories, (ii) it allows the researcher to control the individual decision-making environment to a stronger extent than field studies, and (iii) it overcomes problems of reliability associated with obtaining information on such a sensitive issue in such a contentious environment. Moreover, running the experiments in Egypt is one of the best ways to gain insight into the perceptions that Egyptians have toward alternative forms of governance at a critical time in their history. It also reduces the potential bias associated with problems of external validity that plague many experiments.

The rest of the chapter is organised as follows. In the next section, I briefly review the related literature on what drives tax compliance behaviour. Section 3.3 outlines my theoretical argument, section 3.4 describes the experimental design, section 3.5 presents the experimental results, and section 3.6 concludes.

3.2 Related Literature

The standard analysis of tax compliance can be traced back to the theoretical work of Allingham and Sandmo[3] (1972) who employed Becker's (1968) economics-of-crime model to tax evasion. According to their simple model, tax evasion is just a function of

[3] Their standard theory of tax compliance assumes there is a demand for declared income which takes the following form: $D = D(I, t, p, f)$, where I is income, t is tax rate, p is probability of audit, and f is the fine paid on each unreported dollar.

the probability of audit, the penalty rate, the tax rate and the income level. Consequently, an individual pays taxes only out of fear of detection and punishment.

In most countries, the percentage of individual income tax returns that are subject to a tax audit is less than 1 percent of all returns, and the penalty rarely exceeds the amount of unpaid taxes (Alm & Gomez, 2008; Alm *et al.*, 1992c). A purely economic analysis of the evasion gamble would thus suggest that most rational individuals should underreport taxable income (Alm *et al.*, 1999; Frey & Feld, 2002; Webley *et al.*, 1991). In the real world, however, evasion never rises to the levels predicted by the standard economic theory of compliance, even in the least compliant countries, and in fact there are often substantial numbers of individuals who apparently pay all of their taxes all of the time, regardless of the financial incentives they face from the enforcement regime[4]. It is only with very high levels of risk aversion (Arrow-Pratt measures of risk aversion of more than 30) that observed tax compliance rates can be explained. This extremely high risk aversion assumption is not supported though by empirical evidence from other studies[5]. It thus seems implausible that government enforcement activities alone can account for these levels of compliance. And as a matter of fact, the tax compliance puzzle should be restated as "why people pay taxes" not as "why people evade taxes". This real life observation suggests that there are factors not captured by the economics-of-crime approach that might be affecting the decision to comply.

Consequently, numerous extensions and refinements have been suggested that try to incorporate both economic and noneconomic factors in the tax compliance decision.

[4] In fact, 21% of my subject population reported 100% of their income 100% of the time.

[5] A range of between one and two for the US has been reported in Graetz, *et al.*, 1985.

Regarding the former, a set of economic factors have been suggested and analysed in the theoretical literature, including audit selection methods (Alm & McKee, 2004; Alm & McKee, 2006), the impact of complexity and uncertainty about the relevant fiscal parameters (Alm, 1999b; Alm & Cronshaw, 1995; Beck *et al.*, 1992), the receipt of government services (Alm & Jackson, 1993; Alm *et al.*, 1992c; Cowell & Gordon, 1988; Kim, 2002; Smith & Stalans, 1991), and the existence of positive rewards (Alm *et al.*, 1992a; Falkinger & Walther, 1991).

Fiscal exchange for instance, as one of the economic extensions, views the relationship between taxpayers and government as a relational contract based on an exchange between the government and the taxpayers in both directions. Spicer and Lundtstedt (1976), show that taxpayers feel cheated if they believe that their tax burden is not spent well. Consequently, taxpayers will be more willing to comply with the taxes if they see the government acting trustworthily, efficiently, and in correspondence with taxpayers' preferences. On the contrary, perceived unfairness increases the incentive to comply less. Alm et al. (1992c) find an individual's compliance as a reflection of his/her valuation of the public goods and services provided by the government.

As for the noneconomic factors, some research has been done that tries to expand the basic model by introducing some aspects of behaviour or motivation considered explicitly by other social sciences. On how people perceive probabilities, for instance, there is ample evidence from psychology that individuals overweight the low probabilities that they face in tax compliance (Kahneman & Tversky, 1979; Machina, 1983) which might explain the observed high rates of compliance despite the low

probabilities of audit. Psychologists and other social scientists also argue that social norms and perceptions of fairness can affect tax compliance behaviour.

Another factor has arisen from the theoretical and experimental work on public good provision. Private provision of public goods has been argued to be inefficiently low because of each individual's incentive to free ride on the purchases of others (Isaac *et al.*, 1985; Isaac *et al.*, 1984; Kim & Walker, 1984; Samuelson, 1954). This work suggested that people will be paying taxes voluntarily out of their valuation of the public goods provided, and their recognition that their individual payments are necessary to get other taxpayers to contribute.

Tax morale, interpreted as the intrinsic motivation to pay taxes (Deci and Ryan 1985, Frey 1997a), has also been used as an explanation for high compliance rates, with both social and institutional factors examined (Bosco & Mittone, 1997; Torgler, 2001). For example, taxpayers might be driven by moral sentiments which imply moral costs if they act as free-riders and do not pay their fair share of taxes (Erard & Feinstein, 1994a; Erard & Feinstein, 1994b; Pyle, 1991; Roth *et al.*, 1989). Other studies tried to analyse the extent to which moral suasion and social responsibility can influence taxpayers' moral sentiments and thus the degree of co-operation (Blumenthal *et al.*, 2001; McGraw & Scholz, 1991; Schwartz & Orleans, 1967). Some research has also been done on 'social capital' (referred to as the institutions, norms, and networks that promote cooperation and enable collective action) and how it can impel individuals to pay taxes, despite a perceived low probability of detection (Alm & Gomez, 2008; Bourdieu, 1977; Coleman, 1988; Dasgupta & Serageldin, 2000).

On voting in general, some studies consider direct democracy and its impact on compliance. Pommerehne and Weck-Hannemann (1996) and Frey (1997), for example, show in their field studies that tax evasion at the Swiss cantonal level is lower in direct democratic cantons where referenda on budgetary issues are used as compared to purely parliamentary cantons. Alm et al. (1993) present experimental evidence that tax morale is shaped through voters' possibility of determining public spending; tax compliance is significantly higher when taxpayers can vote directly on the type of the public good than when the public good is imposed, and also when the vote is clear rather than close. Alm et al. (1999) extend this analysis by allowing subjects in their experiment to vote on tax, audit and fine rates. They find experimental evidence that the possibility of voting affects compliance rates significantly. In the same context, Lamberton et al. (2014) show that eliciting taxpayer preferences on government spending increases tax compliance.

These studies find that voting increases tax compliance, attributing it to the argument that voting positively shapes social norms, social capital or intrinsic motivations. Specifically, these papers argue that a social or psychological tax contract between taxpayers and government, going beyond a pure fiscal exchange, emerges more easily if voters vote directly on crucial parameters of the tax compliance game.

The right to recall as a political institution, nevertheless, has received no attention in studies examining the determinants of tax compliance. However, some of the studies that consider the economic consequences of different political institutions stand out. Lizzeri and Persico (2001) for instance, compare the composition of government spending under alternative electoral rules. In the same context, Persson and Tabellini

(1999) construct a model of redistributive politics in which a majoritarian system generates less public good provision than a proportional system.

No study– to the best knowledge of the author – examined the effect on tax compliance of empowering citizens with the right to recall a government official during his/her term in office especially in newly democratising countries. That is where this chapter comes to bridge a gap within the literature using controlled environments and experimental methods to isolate effects of variables of interest (the right to recall as a political institution) on economic outcomes (tax compliance).

Hence, in this chapter, I take advantage of the above mentioned long literature on laboratory experiments and determinants of tax compliance to turn to a different question regarding citizens and their interactions with governments. I study whether the 'right to recall' as a political institution has any economic consequences in terms of compliance rates. And since the different motives underlying the reasoning of taxpayers in their compliance decision with the tax law have to be controlled for as much as possible, this question is studied in an experimental setting.

With most experimental and empirical evidence about tax compliance behaviour coming from the United States, Europe, Asia and Latin America, and hardly any conducted in the Arab Spring World, this experiment's focus on Egypt overcomes this shortcoming and helps to check whether some effects might be independent of cultural environments.

I now turn to the theoretical argument of the impact of different institutional settings on tax compliance behaviour in an experimental framework.

3.3 Theoretical Argument

The central argument of this chapter is that empowering citizens, in newly democratised countries, with the right to recall government officials can affect tax compliance behaviour. In general, there is a strand in the tax compliance literature which views compliance as a reflection of attitudes towards incumbent governments (Alm & Jackson, 1993; Alm *et al.*, 1992c; Cowell & Gordon, 1988; Kim, 2002; Smith & Stalans, 1991). According to this literature, compliance is a function of how corrupt governments are perceived and hence is considered a tool in the hands of taxpayers by which they can punish governments for bad governance.

I argue however, that in the presence of the right to recall, citizens' use of tax compliance as a punishing tool will be minimised. My argument is based on the rationale that elections represent an institutional tool which provides voters with the ability to retain the incumbents in office or to "throw the rascals out" (Lippmann, 1925; Powell, 2000; Riker, 1982). According to this theory, the existence of free and fair elections guarantees that politicians can, to some extent, be held liable to the actions taken while in public office (Rose-Ackerman, 1999). Any institution/rule that provides a punishment mechanism for politicians such as the loss of elections or the possibility of being forced out of office, can induce politicians to improve their behaviour by aligning their own interests with those of their electorates (Bailey & Valenzuela, 1997; Linz & Stepan, 1996; Rose-Ackerman, 1999).

To elicit the relationship between the right to recall (as a political instituton that provides citizens with a punishment mechanism for politicians) and compliance

behaviour of citizens, I simulate a normal interaction between citizens and government—that of tax payment and the provision of a public good. Using novel treatments of governance, I allow subjects in groups of five (as citizens) to make decisions regarding their tax compliance, and designate one subject in the group (as an official) to decide on how to allocate the taxpayer dollars. In one treatment (No-Recall), the official is chosen by the computer at the beginning of the experiment and sits as the incumbent until the middle of the experiment when a new official is randomly selected to serve for the remaining seven rounds. In another treatment (Recall), the citizens are allowed to recall the official after he/she chooses how to spend the tax revenues in the public funds. If a recall is voted for by a majority of the voters, the computer chooses a new official. Thus in both treatments officials are exogenously selected; they can be thrown out of the office though in the Recall treatment but not in the No Recall one. These two treatments aim at isolating the effect of giving citizens a punishing tool by which they can discipline officials.

3.4 Experimental Design[6]

The experimental design is a 2x1 design as depicted in table 3.1 below. Specifically, I have a control group and a treatment group whose subjects are given a right to recall option that they can use at the end of every round of the experiment's 14 rounds. For simplicity, I will call my control and treatment groups a 'No Recall' treatment and a 'Recall' treatment, respectively.

[6] The experimental design here is the same as the one in the chapter on "Political Institutions and Corruption: An Experimental Examination of the 'Right to Recall'", albeit to answer a different research question. I'm including it here again for completeness.

Table 3.1: Summary of Treatments

Treatment Name	Provision of Public Goods	Right to Recall	Sessions	Groups	Total # of Subjects
No-Recall	Endogenous	No	2	12	60
Recall	Endogenous	Yes	2	12	60
Total			4	24	120

In both treatments, subjects are randomly assigned into groups of five at the beginning of the experiment; each group members remain in the same group for the whole experiment. At the beginning of round 1, one of the five group members is randomly selected by the computer to serve as the group's government official, with the other 4 members assigned as citizens. All subjects are then given an easy task of correcting spelling mistakes. Depending on each subject's performance in this task, each earns experimental pounds. Subjects are then asked to decide on how much income to report to the tax authority; the reported income is taxable at the rate of 25%[7]. No taxes are paid on underreported income; however, it is a common knowledge that there is a 20% probability that a subject gets audited, in which case he/she, in addition to paying taxes on actual earned income, pays a penalty on any undeclared income determined by a known penalty structure[8].

[7] In both treatments, all subjects knew that they faced the same tax rate as all other subjects (i.e., horizontal equity was held constant across the two experimental conditions).

[8] Check appendix C for the penalty structure.

Total tax revenues collected from all subjects are then tripled and used to fund one of two feasible public goods; Common-good or Government-good, as being decided by the government official of the group. The benefits of the Common-good are divided equally among group members. The Government-good, on the other hand, benefits the government official more than the other four group members; half of the public fund goes to the government official and the other half gets divided equally among the other four members. The official's choice of the public good then becomes a common knowledge. The round then comes to an end with each subject knowing his/her earnings which is calculated as follows: earned income minus taxes less penalties plus the payoff from the public good. The same sequence of events is then repeated for the rest of the experiment which consists, all in all, of 14 rounds[9].

The two treatments differ from each other only in one aspect: the right given to group members to vote out or to keep their official at the end of every round, and hence the number of rounds a subject may serve as a government official[10]. In the no-recall treatment, the official stays in power for seven rounds, after which a new government official is randomly selected by the computer to serve for the remaining seven rounds of the experiment. In the recall treatment, however, at the end of each round, the group members are given the right to recall the government official through a voting process. If the majority of members (including the government official) vote for a recall, the

[9] This dynamic design captures well the decision to evade or not which is rather a dynamic than a static problem, as taxes are paid annually and today's decisions might have an impact on the way taxpayers behave in the future.

[10] Knowing that the treatment effect might be affecting, in a way or another, the behaviour of the government official and their choice of the public good, which in turn might affect the tax compliance behaviour of the citizens, in my analysis I will be controlling for the public good choices made by the official. This will enable me to focus on just the relationship between treatment effect and tax compliance behaviour.

computer randomly chooses a new official from eligible members[11]. Only if the government official was never recalled during the first seven rounds that the computer randomly selects a new one at the end of round seven[12]. After the tenth round, a "cheap talk" chat session, via text messages within the group members, was allowed. Subjects were not allowed to communicate with one another during the experiment other than the chat session conducted after round 10 and before the start of round 11.

At the end of the experiment, subjects were asked to complete a post-experimental online questionnaire (see Appendix D) designed to get some information about idiosyncratic individual characteristics such as attitudes toward risk, gender, religion, academic performance, the performance of political institutions, … etc.

All 120 subjects (60 subjects in each treatment) who participated in the experiment were volunteers from undergraduate classes at Cairo University in Egypt. Each subject signed a consent form before the start of the experiment and was allowed to participate only once in the experiment (see Appendix B).

The experiment was programmed on Java and conducted in Arabic[13]. It lasted around two hours. Both treatments were conducted at the Laboratory of the Faculty of Economics and Political Sciences at Cairo University[14]. At the end of the experiment,

[11] A group member is eligible if he has not been a subject of recall elections during the last three rounds.

[12] Data show that this happened only for two officials in the recall treatment.

[13] The aim of conducting the experiment in Arabic was to avoid excluding any of the potential subjects who had different linguistic skills and also to avoid any misunderstanding of the instructions.

[14] The lab was equipped with dividers to ensure subject privacy.

subjects were paid for their accumulated earnings over the 14 rounds, with total earnings ranging between $30.00 and $60.00[15].

3.5 Experimental Results

Before beginning my discussion of the findings of the experiment, it is useful first to get a sense of the data by taking a quick look at subjects' demographics, their answers to the post-experiment questionnaire, and the dynamics of their compliance behaviour. Table 3.2 gives a summary of subjects' demographics.

Table 3.2: Subjects' Demographics

	No-Recall	Recall
Number of Subjects	60	60
Gender (female)	88%	70%
Marital Status (single)	95%	93%
Age bracket (18-23)	98%	100%
Religion (muslim)	95%	92%

It is clear from table 3.2 that my sample consisted mostly of single, females and muslim students. As a result, and to avoid a possible effect on compliance behaviour, I will be controlling for these various individual differences in my analysis. Looking at subjects' answers to the end-of-experiment-questionnaire, I find that 92% of the subjects believe that everyone should declare everything he/she earns to the tax authorities. On the other hand, 51% are convinced that most people try to avoid paying their fair share of

[15] At the end of the experiment, a subject's total accumulated earnings in experimental pounds over the 14 rounds were divided by the number of rounds and multiplied by 10 to reflect the conversion rate of 1 EP = 10 Egyptian Pounds. Payments were made in sealed envelopes to protect the privacy of subjects.

tax[16]. This means that each subject estimates others' acceptance of tax evasion as being greater than his/her own[17]. This perception could have an implication on tax compliance attitude, hence, as extra controls, subjects' answers to the questionnaire, together with their demographics, will be used in my analysis of the relationship between the right to recall and tax compliance behaviour.

I have also classified subjects into "full compliance", "partial compliance" and "zero compliance" categories[18]. Data reveal that, in the aggregate, subjects' compliance behaviour strongly follows a bimodal pattern[19], such that 48% of subjects reported their true income, 46% reported untrue non-zero amounts, and only 6% reported zero income. Figure 3.1 shows proportions in each compliance category for both treatments. I then test whether the proportion of individuals falling into each compliance classification varied based on the 'right to recall' condition. However, to accommodate the extremely small number of participants who reported zero income, I used a Fisher's exact test of proportions. This test revealed that, as expected, the right to recall has a significant effect on subjects' compliance tendencies (Fisher's exact test $p = 0.003$).

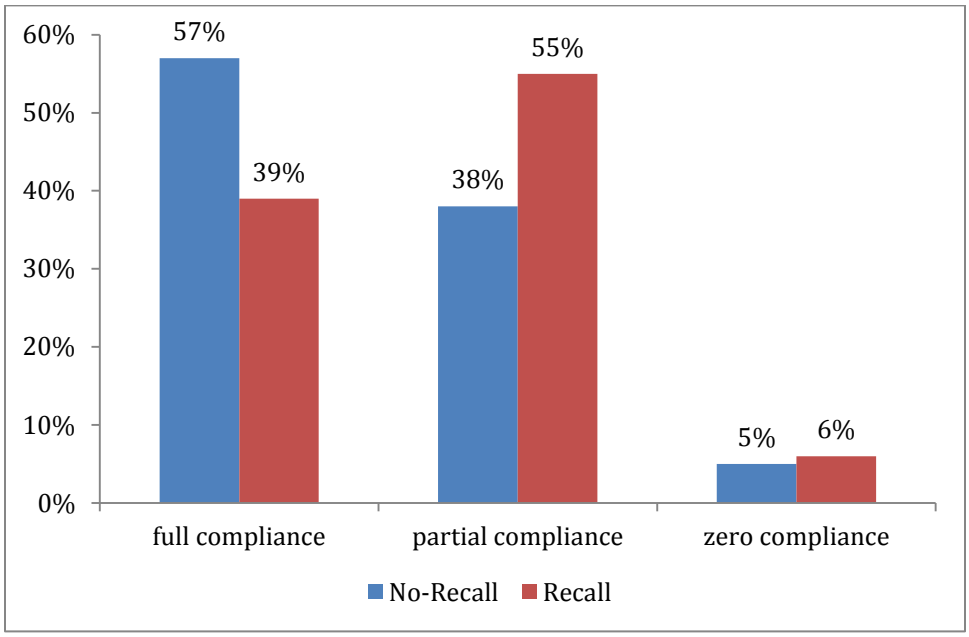
[16] I think this could justify low compliance rates in the real world as stemming from this misperception.

[17] This self–other discrepancy in tax ethics could undermine people's tax compliance as they conform to the misperceived social norm. Hence, a policy implication of this is for the government to try to correct this misperception in order to improve compliance.

[18] Compliance rate = reported income/income

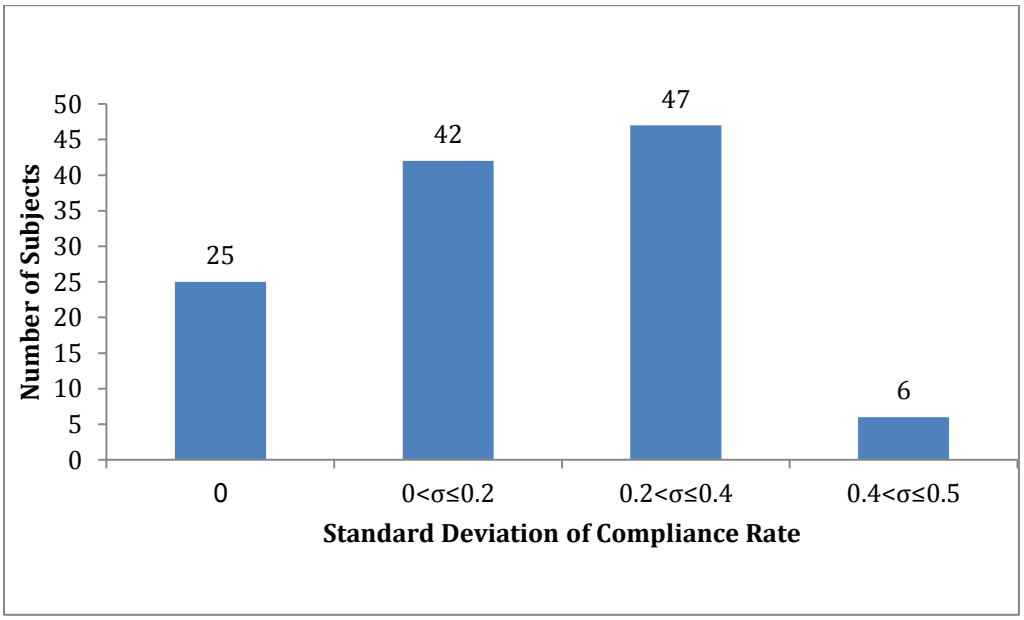
[19] This bimodal pattern is common in experimental studies on tax behaviour (Alm, *et al.*, 2011, Alm, *et al.*, 1992b, Lamberton, *et al.*, 2014.)

Figure 3.1: Compliance Proportions



To check the variation in each subject's compliance behaviour, I classified subjects into "static compliance" and "dynamic compliance" categories. I found that 25 subjects out of the 120 (i.e more than 20 percent of my population) were highly static in their compliance attitude (i.e had the same compliance behaviour across the 14 rounds), no matter what environment they were in or how other group members behaved. Figure 3.2 gives the standard deviation of subjects' compliance behaviour across the different rounds.

Figure 3.2 Histogram of Variation in Compliance Behaviour

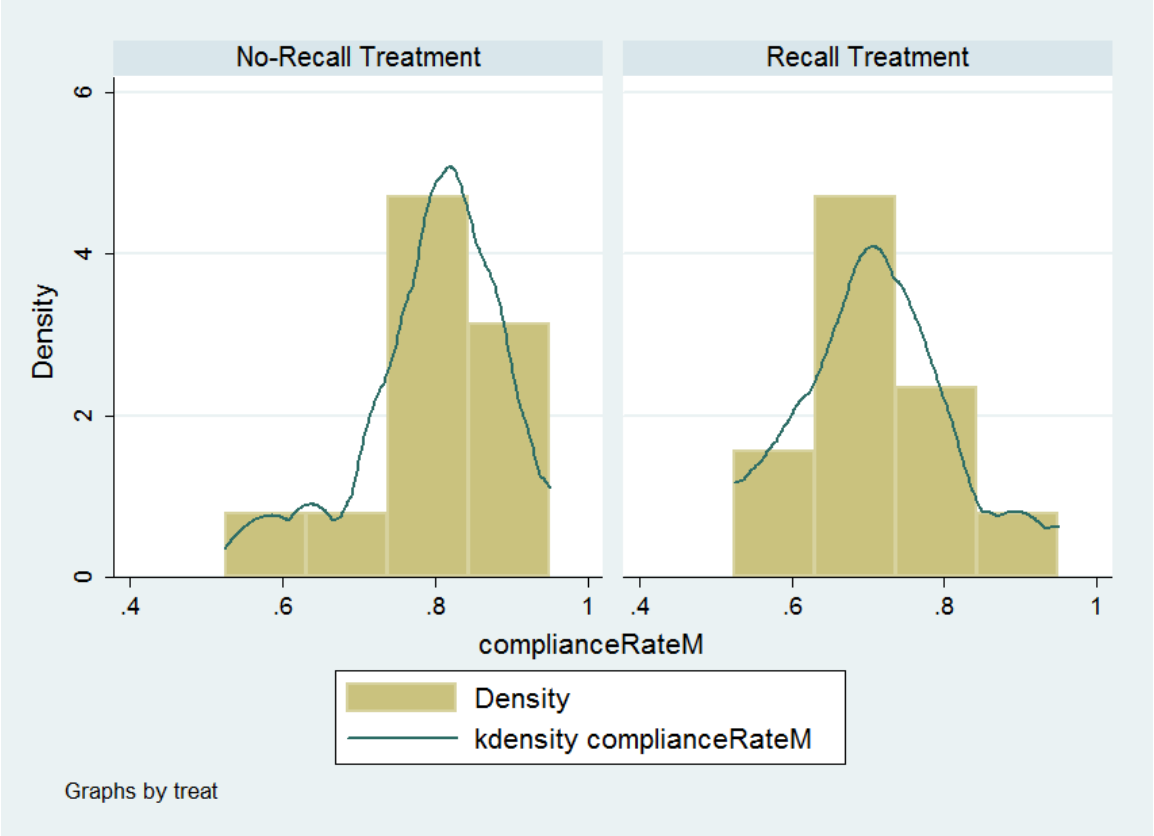


I now begin my discussion of the findings of the experiment with a comparison of my two treatments; the *No-Recall* and the *Recall.*

Starting with compliance rates, I find that mean compliance is 80% in the no-recall treatment (sd=0.311, N=839, 95% confidence interval is (73.9, 86.0)) and 71% (sd=0.329, N=840, 95% confidence interval is (63.7, 78.3)) in the recall treatment, as shown in figure 3.3. The null hypothesis of compliance rates in the two treatments coming from the same distribution is rejected by Kolmogorov-Smirnov test (p=0.000). A mean-comparison test, t-test[20], is also used and the null hypothesis of equal means is rejected at the 5 percent level (pvalue=0.024).

[20] This is independent samples t-test which compares the difference in the means from the two treatments to a given value (usually 0). In other words, it tests whether the difference in the means is 0.

Figure 3.3: Mean Compliance Rates in the two treatments



It is important to note however that the treatment effect (which is the right to recall option) might be affecting the public good choices of government officials (i.e officials' corruption level), with subsequent effects on both officials and citizens compliance behaviour. To avoid this endogeneity problem, my analysis will focus only on citizens' compliance behaviour while controlling for the government official's choice of public goods.

Before starting my analysis of the relationship between tax compliance and the right to recall, however, I will examine briefly my claim of the possible endogeneity of public good provision. Taking groups as the unit of observation, I find that the mean of the distribution of frequencies of G-good funding is 57 percent (95 percent confidence

interval is (39%, 76%)) in the No-Recall treatment and down to 49 percent (95 percent confidence interval is (49%, 79%)) in the Recall treatment. This means that, corruption, defined as the frequency of the G-good being funded, is higher in the No-Recall treatment. In addition, and to get a more robust idea in terms of statistical significance on the association between the two types of institutions and the level of corruption, I used my pooled sample to estimate a probit model where the dependent variable is a dummy that takes the value of 1 (0) if the group official decides to fund G-good (C-good). In the list of explanatory variables that are expected to affect the official's decision is a dummy variable for the No-Recall treatment that measures the overall effect of taking away the Recall option on the observed likelihood of G-good funding. Data show that the likelihood of corruption goes up by 13.7 percent (one-sided p=0.04) in the absence of the Recall option.

Based on the above evidence of a possible endogeneity problem, I will be controlling for public good choices made by government officials in my analysis of citizens' compliance behaviour. *First*, I look at citizens' compliance behaviour. I find a mean compliance rate of 78% (standard deviation=0.32, N=671) in the no-recall treatment, and 69% (standard deviation=0.34, N=672) in the recall treatment. The null hypothesis of compliance rates in the two treatments coming from the same distribution is rejected by Kolmogorov-Smirnov test (p=0.000). And the difference in means is statistically significant at the 1 percent level using the t-test (pvalue=0.000). *Second*, I plot, in figures 3.4 and 3.5, the compliance distributions of citizens conditional on the type of public good provided. Figures 3.4 and 3.5 show a lower mean compliance rate in the recall treatment even after controlling for the type of public good provided. This

difference is statistically significant using the t-test (t=1.6, p=0.6 when conditional on good C) and (t=2.8, p=0.02 when conditional on good G).

Figure 3.4: Citizens' Mean Compliance Conditional on Good C Funding

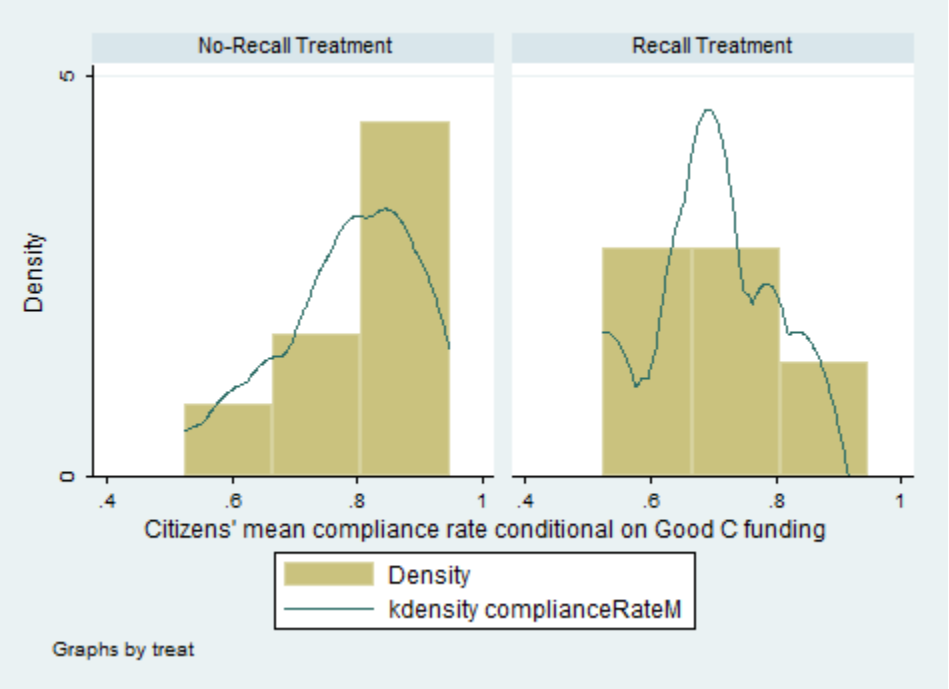
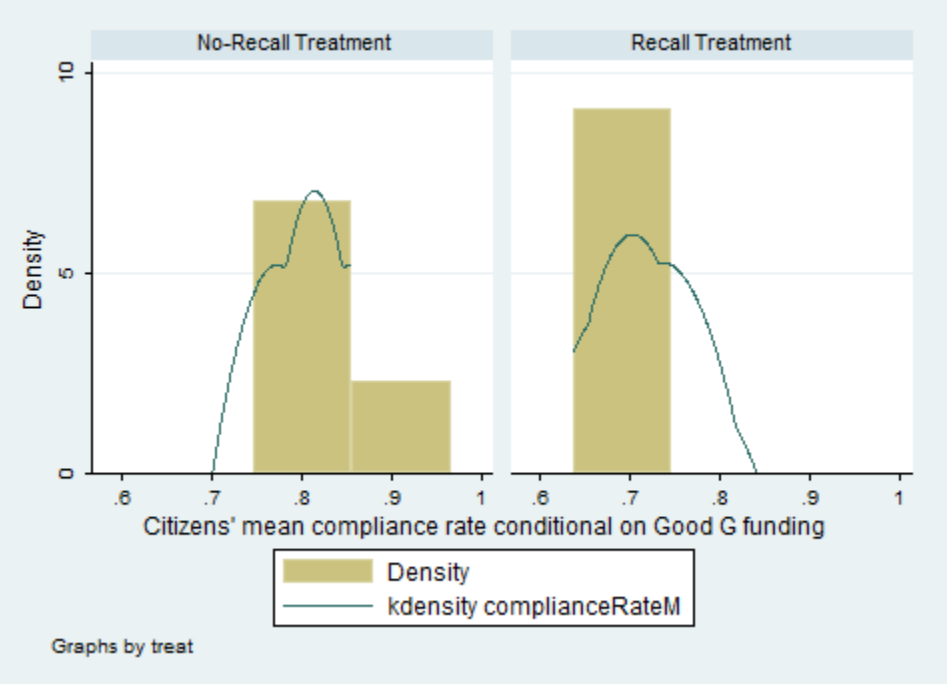
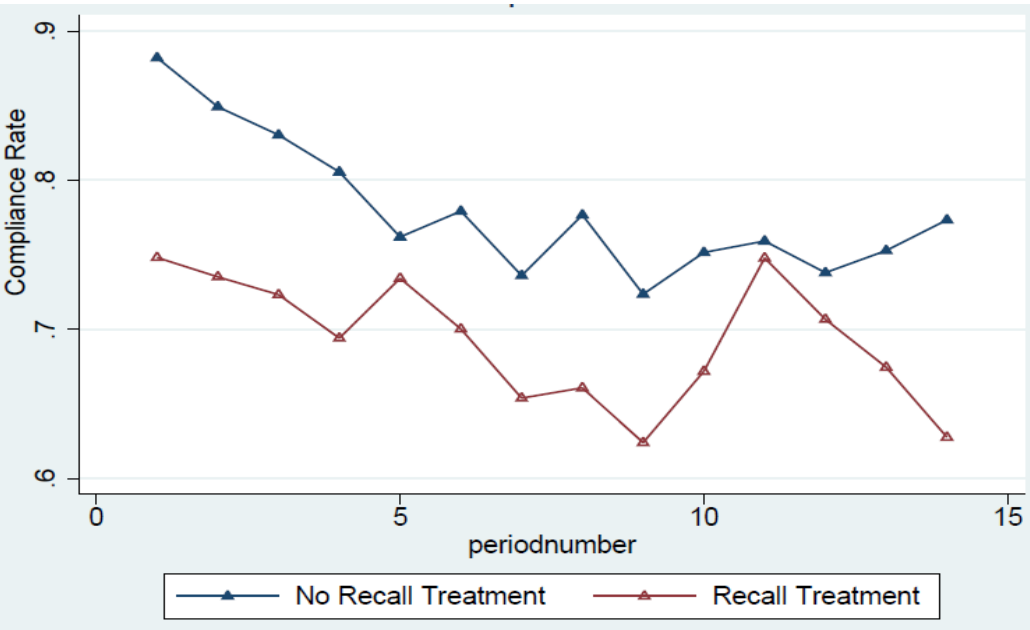


Figure 3.5: Citizens' Mean Compliance Conditional on Good G Funding



Third, and to get an overall impression of the effect of the Recall option on citizens' compliance behaviour over time, I measured its evolution over the 14 rounds. Figure 3.6 shows its evolution for the two treatments. A visual inspection of Figure 3.6 suggests that: (i) citizens' compliance behaviour is negatively affected by the Recall option (as the Recall [red] line is everywhere below the no Recall [blue] line), (ii) there is a persistent downward trend in citizens' compliance rates in both the No-Recall and Recall treatments until the chatting event, (iii) chatting (after round 10) seems to have a positive permanent effect on increasing compliance in the No-Recall treatment but just a temporary one in the Recall treatment.

Figure 3.6: Time Series of Citizens' Compliance Rates



I now turn to examining the effect of the right to recall option on citizens' tax compliance behaviour. I use a censored regression model[21]where the dependent variable is the citizen's compliance rate. In model 1, I included a dummy for the recall treatment (DRecall). In model 2, I have added additional regressors that control for subject idiosyncratic characteristics such as gender, religion,…etc., and questionnaire answers on perceptions of one's and others' compliance. An in model 3, I have added, as extra controls, the official's previous choice of public good (Public Good)[22], whether the citizen was penalised and/or audited in the previous round (Penalty and Audit, respectively), the opportunity to communicate via a chatting event (Chatting), the citizen's public earnings in the previous round (Public Earnings), the citizen's income level (Income), and the round number (Period number). Results are in table 3.3.

Without any controls, the 'right to recall' has a significant negative effect on compliance (-20 percent, p=0.041). Recall continues to decrease tax compliance when including both demographic measures and questionnaire answers as controls (-22 percent, p=0.040). It also continues to decrease compliance when controlling for the official's previous choice of public good and other variables of interest (-22 percent, p=0.042).

Empirical Result: *The 'Right to Recall' has a significant negative effect on compliance.*

[21] Note that the use of a censored regression with clusters at the subject level is warranted as we have more than one observation per subject serving as a group citizen. For this regression, a variable called "censors" was created that takes value '-1' for 0 compliance and '1' for full compliance.

[22] This variable is used to control for the possible endogeneity problem outlined above.

Table 3.3: Effect of the 'Right to Recall' on a Citizen's Compliance

Citizen's Compliance	(1)	(2)	(3)
Treatment (DRecall) (D)	-0.202**	-0.218**	-0.217**
	(0.041)	(0.040)	(0.024)
Public Good G (D)(Lagged)			-0.006
			(0.906)
Penalty (D)(Lagged)			-0.124***
			(0.000)
Audit (D)(Lagged)			0.154**
			(0.013)
Chatting (D)			0.087*
			(0.063)
Public Earnings (Lagged)			0.016***
			(0.000)
Period number			-0.017**
			(0.021)
Income			0.014
			(0.254)
Demographics			
Gender (Female) (D)		-0.007	0.010
		(0.950)	(0.926)
Marital Status (Single) (D)		-0.101	-0.137
		(0.496)	(0.334)
Religion (Muslim) (D)		-0.0009	0.036
		(0.997)	(0.863)
High grade (D)		0.134	0.143
		(0.222)	(0.158)
Late years (D)		0.186	0.165
		(0.122)	(0.145)
Low compliance not OK (D)		0.189	0.166
		(0.243)	(0.272)
Others low compliance (D)		-0.115	-0.098
		(0.251)	(0.285)
Intercept	1.035***	0.9006***	0.584
	(0.000)	(0.003)	(0.123)
Observations	1343	1343	1248
Pseudo R^2	0.0135	0.0306	0.0316
Log Likelihood	-1141.9325	-1122.1111	-1051.689

Standard errors in parentheses: ***p<0.01, **p<0.05, *p<0.1.

Note that (D) stands for dummy variable.

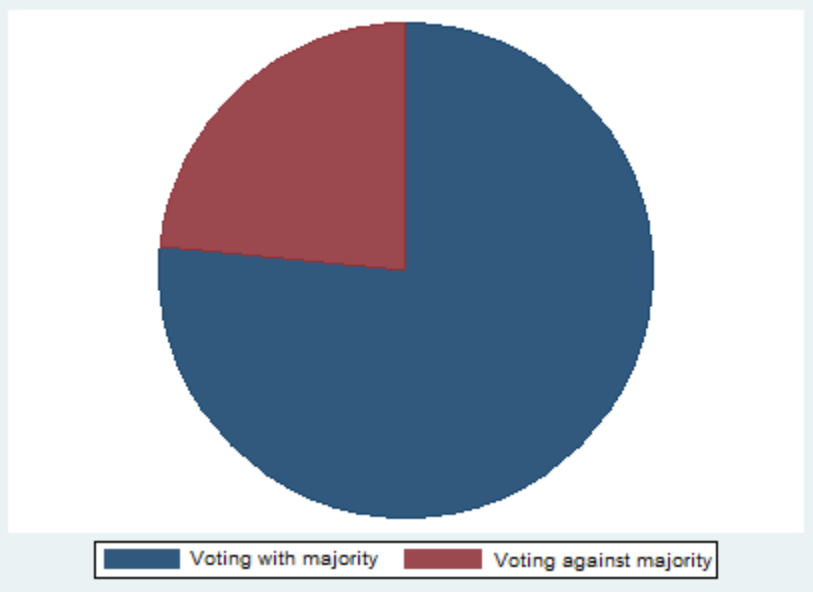
The above empirical result is however counterintuitive as people might believe that empowering citizens with an election tool to discipline corruption could act as an alternative to the use of tax incompliance to express dissatisfaction. Although it is important to know that the right to recall has a negative impact on compliance, it is scientifically even more important to know how or by what means this effect occurs. This invokes the idea of mediation; the process by which some variables exert influences on others through mediator variables. Mediation hypotheses posit how, or by what means, an independent variable (X) affects a dependent variable (Y) through one or more potential intervening variables or mediators (M) (Preacher & Hayes, 2008).

A possible channel could be that while the 'right to recall' increases citizens' ability to punish governments, it nevertheless harms social solidarity – and hence reduces citizens' motive to comply. It does so by dividing a society into winners and losers, with losers feeling alienated because the majority of society does not share their same views. Those losers hence would have no strong obligation to cooperate with fellow citizens for the benefit of all, and would act against the tax law, as psychological costs associated with incompliance are reduced. The rationale behind this potential mechanism is the theory of divisive elections. According to this theory, direct elections may decrease people's level of trust and lower their personal satisfaction with the democratic process. This is because the zero-sum nature of elections always generates losers. These divisive elections result in a large part of the electorate; namely the supporters of the losing candidate, being dissatisfied with the outcome. This dissatisfaction may get translated into disillusionment with government institutions and the political process (Anderson *et al.*, 2005; Brunell, 2005). The disappointment level will most probably be stronger if the

citizen has personally participated in the voting process, rather than just observing its outcome.

To test this potential channel, I have *first* constructed a variable called "against-majority vote". This variable captures those citizens whose voting preferences were against the vote of the majority of their group members. It takes value '1' if the citizen voted for ousting the current official whereas the majority of the group voted for keeping him, or if the citizen voted for keeping the current official in office whereas the majority of the group voted for his ousting. Figure 3.7 shows the proportion of citizens who voted against the majority of their group and hence could be used as a proxy for those losers out of the voting process.

Figure 3.7: Proportion of subjects who voted against the majority



Then, I added this variable to my censored regression analysis. The dependent variable is the citizen's compliance rate. Specifically, in model 1, I included, as an

explanatory variable, whether the subject voted against the majority in the previous round (vote against majority), together with a list of other regressors that are expected to affect the citizen's compliance decision. And, in model 2, I added additional regressors that control for individual idiosyncratic characteristics such as gender, religion, and grade, for example. Table 3.4 reports estimated marginal effects of the regressors (p-values in brackets).

Table 3.4: Censored Regression Analysis of a Citizen's Compliance Rate

Citizen's Compliance Rate	**Recall Data**		**All Data**	
	(1)	(2)	(1)	(2)
Income	0.005 (0.661)	0.002 (0.866)	0.0164 (0.243)	0.016 (0.256)
Period Number	-0.019** (0.020)	-0.018** (0.028)	-0.0168** (0.016)	-0.0172** (0.017)
Chatting (D)	0.130** (0.045)	0.124* (0.056)	0.109* (0.090)	0.109* (0.097)
Penalty	-0.092***	-0.083***	-0.1279***	-0.1242***
(lagged)	(0.000)	(0.000)	(0.000)	(0.000)
Audit	0.080	0.058	0.1518**	0.142**
(lagged)	(0.278)	(0.428)	(0.020)	(0.025)
Public Earnings	0.0180***	0.0176***	0.024***	0.0256***
(lagged)	(0.001)	(0.000)	(0.000)	(0.000)
Previous Funding of Good G	-0.029	-0.014	0.0109	0.0132
(lagged)	(0.624)	(0.806)	(0.819)	(0.786)
Vote against majority	-0.182**	-0.180**	-0.2275***	-0.2485***
(lagged)	(0.019)	(0.015)	(0.002)	(0.002)
Demographics				
Female (D)		-0.128 (0.299)		0.0386 (0.723)

Muslim (D)		-0.060 (0.684)		0.0220 (0.911)
Single (D)		0.0242 (0.874)		-0.1039 (0.414)
Junior and up (D)		0.081 (0.453)		0.130 (0.215)
High GPA (D)		-0.0433 (0.693)		0.156 (0.121)
Treatment Effects				
No Recall (D)			0.1669* (0.069)	0.1808* (0.064)
Chatting No Recall (D)			-0.0400 (0.611)	-0.0436 (0.588)
Nr. Of Observations	624	624	1248	1248
Nr of Clusters	60	60	116	116
R^2	0.0475	0.0587	0.0627	0.0743
Log-likelihood	-504.542	-498.599	-1017.952	-1005.32
Obs. P Predicted P	0.000	0.000	0.0000	0.0000

Data reveal a significant negative association between a citizen's compliance rate and his/her casting of a vote that was against the majority of the group (-23 percent, p=0.002).

Finally, to check this mediation channel, I follow Preacher and Hayes (2008) bootstrapping methodology set at 1000 iterations, with a significant mediation indicated by a 95% confidence interval for the indirect path that does not include zero. This methodology revealed a possible mediating channel from the 'right to recall' to 'compliance' via 'voting against the majority' (95% CI for indirect effect: -0.03 to -0.0002). This result suggests that lower compliance rates in environments with a right to recall option could be partially explained by the existence of losers from the voting process.

3.6 Conclusion

Social justice has been central among the demands raised by Arab Spring uprisings that swept a number of Arab World countries since 2010-11. The ability to transform this demand from being a mere protestors' slogan to a reality on the ground depends partly on the ability of the new political system to improve its public finances. Understanding what determines tax compliance behaviour of citizens in these newly democratised societies thus becomes a crucial point.

In the last three decades, economists have been keen on studying the determinants of the individual's tax compliance decision. Despite these efforts, our understanding of the reasons behind an individual's tax compliance behaviour remains limited. For instance, the traditional economic analysis which focuses mainly on deterrence was shown to be incapable of fully explaining the observed tax compliance behaviour of citizens. Consequently, there were many attempts that tried to incorporate other economic and non-economic factors into the tax compliance decision.

By using a novel dataset from a laboratory experiment, run in post-revolutionary Egypt in March 2013, to analyse tax compliance as a dependent variable, I hope to fill a large, and largely unexplored, gap in the tax compliance literature on the determinants of tax compliance, especially the role of empowering citizens with a 'right to recall 'option, especially in newly democratised countries.

Focusing on the case of Egypt, being the most populous Arab Spring country and where the right to recall the president has been recently enshrined in its constitution, I find a 20% decrease in compliance when citizens are given the right to recall their

officials. This result is however counterintuitive. Consequently, I tried to test for potential channels, in line with the Egyptian context, through which the right to recall could be impacting negatively on compliance; namely the divisive nature of elections and the creation of losers from the voting process. These losers feel unhappy with the outcome of the voting process and hence would have no strong obligation to cooperate with fellow citizens for the benefit of all. They would act against the tax law as a form of negative reciprocity towards their feeling of defeat, as psychological costs are reduced. So, the more frequent such 'divisive ballots' take place, the more the social capital of the society gets harmed. And indeed, this channel proved to be affecting compliance negatively in a significant way.

In fact, Egypt has witnessed since 2011 a sharp increase in the number of times its voters were called to the polls. In addition to three constitutional referendums, two legislative elections, and two presidential elections which citizens voted on, there have been two massive uprisings both of which saw millions of Egyptians expressing their opinions regarding the incumbent president – and both of which have led to the removal of that president. Whereas frequent elections and high government turnover might indicate a high degree of political efficacy and government responsiveness, they might also backfire especially if they put opposing camps against each other in a highly charged environment that often. Indeed, all these seven voting processes mentioned above have been highly polarised – and polarising – in Egypt. They have divided the electorate to an extent probably never seen before by the current generation of Egyptians who were used to the artificial social harmony imposed by the pre-2011 authoritarian regime. Whether

one belonged to Islamists, liberals, or supporters of the deep state[23], the drift between these three groups was created and widened by the divisive and frequent electoral contests in which they had to fight each other in just three years. In a country not used to such polarisation, electoral divisions were then transformed into religious divisions and allegations of country betrayal, working against the national interest and being agents for foreign governments.

If divisive elections lead to real responses, then public policy initiatives addressed at tackling evasion may need to take account of them. Specifically, positive actions by the government in developing social capital can improve tax compliance. This could be done by integrating all factions of the society in the decision making process in order to enhance a feeling of solidarity among the citizens. However, it should be acknowledged that the current experimental design does not allow for rigorous testing of the hypothesis that compliance is lower with lower feelings of solidarity. Hence more scope for research is needed with more tailored and direct designs on issues of solidarity. The findings of my experiment suggest that there is yet more scope for research on moral coercion and its impact on feelings of solidarity and thus law avoidance.

Moreover, additional research using lab experiments may render interesting insights if subjects are divided according to their ideological preferences and assigned into political groupings matching the three political ideologies that dominate political life in Egypt; namely 'Deep State', 'Liberals', and 'Islamists'[24]. This potential future research

[23] Supporters of the deep state are those who support formal state institutions (military, security, etc.). A big bulk of them is those supporters of the previous regime of Mubarak.

[24] Indeed my next two chapters will examine the effect of polarisation on support for reform and the effect of negative campaigning on interpersonal trust, respectively.

could provide better insights as to which political group, in case it was a loser in the voting process, could have a more significant impact on compliance. For instance, the 'Islamist' group might be assumed to have a less negative impact on compliance than the 'Liberal' group, due to its religious ideology and which considers tax evasion a taboo. The findings of this research might have important policy implications regarding the integration of losers into the political process.

Chapter 4

Political Polarisation and Support for Economic Reform: Experimental Evidence from Egypt

4.1 Introduction

According to the International Energy Agency, the total cost of government subsidies for fossil fuels in the world increased from $311 billion in 2009 to $544 billion in 2012. Once lost tax revenues are included, this figure rises to around $2 trillion, equal to over 8% of government revenues, according to a recent IMF report. Furthermore, IMF research shows that only 7% of fuel subsidies in poor countries go to the bottom 20% of households; 43% end up in the pockets of the richest 20%. Thus, in many countries with such subsidies there is often widespread acknowledgement from political leaders that reform and reductions of the subsidies would improve their economies.[1]

Egypt's use of fuel subsidies is a particularly noteworthy example of the problem. Such subsidies represent a substantial drain on Egypt's budget, amounting to about 73%

[1] We outline the case of Egypt in this paper. For a discussion of the need for reform in Indonesia, see Pradiptyo, *et al.*, 2012., and in Sudan, see James, 2014.

of all subsidies and approximately 21% of the country's budget (Castel, 2012).[2] Moreover, as shown in other countries, the subsidies are not benefiting most voters. An IMF study (Coady *et al.*, 2006) found that the bottom 40% of the population typically receive only 15-25% of the value of energy subsidies whereas another one (IMF, 2010) found that the top income quintile captures six times more in fuel subsidies than the bottom quintile. Hence, from an economic perspective, a reform of the subsidy program should arguably be popular with the vast majority of voters and supportable across ideological lines.

Indeed, in the last six years, fuel subsidy reforms have been attempted by all the major political parties in power. In 2008, Hosni Mubarek's National Democratic Party (NDP) lifted some subsidies, increased petrol and diesel prices, and advocated additional further measures. After Mubarak's removal and their ascent to power, the Muslim Brotherhood suggested a reform much similar to that of the plans suggested during the last years of the Mubarak regime (El-Zoghby, 2014). And in June 2014, newly elected Abdel Fatah al-Sisi, with the support of the founder of the '*Tammarod* (or Rebellion) Movement' which led the public mobilisation to remove Mohamed Morsi of the Muslim Brotherhood, raised petrol and diesel prices to deal with an imminent crisis of budget deficit in July 2014.

[2] The price of one litre of petrol in Egypt in 2012 is US $ 0.45 compared to a world average of US $1.41 and an OECD average of US $ 1.95 (World Bank). Similarly, the price of diesel in Egypt is US $ 0.18 compared to a world average of US $1.27 and an OECD average of US $ 1.88 (World Bank), even though Egypt is a net fuel importer. Official statistics show that fuel subsidies increased from 40 billion Egyptian Pounds (LE) (equivalent to about US$ 7.2 billion) in 2005/2006 fiscal year (FY) to LE 68 billion (equivalent to US$ 11.9 billion) in the 2009/2010 FY and peaked to over LE 100 billion in 2013/2014 FY – equivalent to 5% of GDP. In 2012, energy subsidies in Egypt amount to one-third of total public spending, four times total public spending on healthcare (excluding wages), seven times total spending on education (excluding wages), and sixty times total public spending on pensions for non-contributory pensioners.

Nevertheless each time these attempts at reform have been made, the advocates faced opposition from political actors out of power who supported almost the same measures when in power themselves. That is, when Mubarak's party enacted reforms in 2008, all members of the then opposition Muslim Brotherhood voted against the legislation even though once in power themselves they proposed similar reforms.[3] And in 2012/13 the liberal opposition to Mohamed Morsi of the Muslim Brotherhood cited as one of their principle complaints rising energy prices even though they later supported Sisi's reductions of subsidies (Antar, 2014). Yet, under Sisi, it was the turn of the Muslim Brothers to again reject such plans and even organise protests in opposition to fuel price increases (Ali, 2014).

The fact that in July 2014 the Brotherhood chose to couple protests against price increases with those denouncing Morsi's removal and the Israeli invasion of Gaza demonstrates how out of power political parties in Egypt have fused the issue of fuel subsidies to larger ideological debates, taking positions on reforms in opposition to the party in power even while acknowledging when they are in power themselves the need for such reforms (Tarek, 2014).

We argue that the experience in Egypt speaks to a general problem with enacting common value reforms that can occur in countries with political competition and substantial polarisation on ideological grounds between the parties. That is, we contend that when political parties align their positions on reforms to coincide with other ideological differences when in opposition to parties in power, the debate around such

[3] Minutes of Parliamentary Session, May 5th 2008.

reforms becomes guided by partisanship and ideological differences unrelated to the reforms themselves, decreasing the probability that such reforms can be enacted.

In this chapter we investigate our contention by considering the effects of ideological polarisation on support for common value reforms. We do so using an economics-style incentivised laboratory experiment, which incorporates naturally occurring political ideological divisions in Egypt. In our main treatments subjects are first divided in societies corresponding to their ideological preferences. They then are given the choice between voting for a measure (reform), which benefits all but with an additional benefit to the society with the most votes in favour of the measure, versus a less profitable alternative for all but with equal expected payoffs across societies. Our principal experimental manipulation is the information subjects have about support for the reform measure from previous sessions. That is, in our *Baseline Treatment*, subjects vote without any prior information concerning the relationship between society membership and support for reform. But in our *Informed Treatment*, subjects are given information about previous vote choices in the *Baseline Treatment* by society membership, which suggests that one society is more supportive of reforms, while the other two are in opposition.

We find that the polarising information has significant effects on how voters view their position on the reform measure; approximately 23% more are likely to explain their vote in terms of their society membership in the *Informed Treatment* than in the *Baseline Treatment.* Furthermore, we find significant evidence that vote choices are similarly influenced in the expected directions; members of the society which was reported to most vote for reform in the *Informed Treatment* were 17% more likely to vote for reform than

in the *Baseline* and members of the societies which were reported to most vote against reform in the *Informed Treatment* were approximately 9% less likely to support reform than in the *Baseline*. Our results thus demonstrate that coupling support for reform with other strong and substantive ideological differences can polarise voters decreasing support for reform for some voters while increasing it among others even when reform clearly benefits all voters in the absence of such polarising information.

Furthermore, in subsequent treatments we find that one of the principal reasons for the effects we observe appears to be the differential benefit provided to one society over others when reform is enacted. Although all subjects benefit, the fact that some appear to benefit more enhances the effect of polarising information. When reform is not coupled with such a differential benefit (i.e. the fees paid are not distributed to any society but kept by the experimenters), polarising information has much less of an effect on voter explanations of their choices and their voting behaviour. Finally, we find that voters are also much more likely to wish to purchase polarising information when reform has a differential effect as compared to the case where it does not, again supporting our conclusion that one primary reason why voters in our experiment are susceptible to the polarisation of reform stems from the possible differential benefit to one of the societies.

In the next section of this chapter we briefly review the related literature on politics and reform. Section 4.3 outlines our theoretical argument, Section 4.4 describes our experimental design, Section 4.5 presents our results, and Section 4.6 concludes.

4.2 Related Literature

The literature on how political factors can affect economic reform received a push in the early 1990s as a result of the democratising – and at the same time liberalising – countries of Eastern and Central Europe (for single-country studies see Aslund, 1995; Bartlett, 1997; Bruszt & Stark, 1997; Sachs, 1995; Shleifer & Treisman, 2000). Two views can be identified. The first argues that the central dilemma of reform is temporal: reforms promise to generate large economic gains in the future but can be achieved only by imposing painful reforms today (Haggard, 1990; Nelson, 1990; Przeworski, 1991; Stiglitz, 1999; Williamson, 1994). To overcome resistance from groups losing from reform in the short term, thus, governments need to concentrate power in executives who are ideologically committed to reform, backed by international financial organisations, and insulated from popular pressure. The second view is the 'partial reform' one, which views that the main obstacles to economic transformation are the early winners from distortions in the transition economy who then use their gains to block further reform (Hellman, 1994). This second view suggests that robust political competition and diverse governing coalitions are essential to prevent the early winners from taking control of the state and sidetracking further reform.

Political polarisation has received less attention in studies examining how politics can affect economic performance. However, some of the studies that consider polarisation stand out. Haggard and Kaufman (1993), for example, contend that polarised party systems impede support for economic adjustment because they make compromises less likely. Furthermore, Alesina and Drazen (1991) suggest that the economic performance in post-communist countries is a reflection of the political struggle between

ex-communist and anti-communist factions who are engaged in a 'war of attrition' over economic and political resources, a situation that inhibits the introduction of coherent economic policies necessary to promote growth (see also Alesina & Rosenthal, 1995; Fiorina, 1996). Another way in which polarisation is viewed as an obstruction to reform is through its effect on increasing the probability of sharp changes in economic policy thereby undermining confidence in governments' ability to make credible commitments to property rights (Alesina & Tabellini, 1990; Svensson, 1998). Frye (2002) also shows that political polarisation in post-1990 Eastern and Central Europe had a devastating effect on economic growth because it led to more volatile policies.

Moving on to studies focusing on obstacles to subsidies reform in developing countries, the literature has concentrated on a range of social, economic and political factors. Nevertheless, political polarisation has been largely neglected in this literature. On economic factors, researchers have pointed to the associated loss of economic rents by affected parties, the inability to agree on who is going to bear the cost of funding subsidies' removal, lack of institutional capacity to enact reforms, and fear of the potential inflationary consequences of price adjustments to energy (Abouleinein *et al.*, 2009; Blatter & Buzzell, 2013; Commander, 2012). The uncertainty regarding the distribution of gains and losses from reform (Fernandez & Rodrik, 1991) and the lack of information by voters on policies and by governments on voters' preferences (Besley, 2007) have also been emphasised. Moreover, Rodrik (2007) contends that the combination of external shocks with wider presence of frail institutions poses greater difficulty to reform.

As for the political factors studied, there is a general argument that authoritarian regimes are more likely to follow more redistributive income policies (Acemoglu & Robinson, 2006) of which an effective tool is energy subsidies. Another obstacle is the expectation that reform might alter the distribution of political power by reducing the scope for politicians or parties to hand out rents or curbing the ability of recipients to fund political parties (Acemoglu & Robinson, 2001; Nikoloski, 2012). The existence of entrenched powers of particular lobbies and timing of reform in relation to the electoral cycle can also prove to be troublesome (Commander, 2012). Finally, some have indicated that the reasons behind the unwillingness to reform contain many country specifics (Nikoloski, 2012).

Three recent experimental studies have examined voting over reform in the laboratory: Cason and Mui (2003; 2005), Fischbacher and Schuddy (2014), and Paetzel et al (2014). Cason and Mui focus on how costs of political participation can make it difficult to pass reforms under both conditions of certainty and uncertainty; Fischbacher and Schuddy consider how vote-trading among legislators may lead to failures to enact reforms; and Paetzel et al find that concerns about fairness and efficiency affect individuals' willingness to support reform such that some who suffer from reform are willing to support them in the interest of efficiency while others who benefit may oppose reform because they are inequality averse.

4.3 Theoretical Argument

Our argument is that the existence of deep political divisions can affect voter attitudes towards public policies, which are not inherently ideological – i.e. policies which are

welfare improving for all voters. Polarisation can cause individuals to change their attitudes towards the same policy depending on the information received on how different political parties view that policy, even when fully informed as to the impact of the policy. We draw on the foundations of social identity theory according to which partisan attitudes are a natural psychological outgrowth of self-perceived membership in a political party or group (Greene, 2004). Once such affiliation is established, intergroup differentiation occurs through in-group favouritism and out-group derogation (Brewer & Brown, 1998). Whereas the former refers to the tendency to mentally exaggerate the favourable qualities of one's group, the latter is exaggeration of the negative characteristics of out-groups. The net result of either process is enhanced group differentiation (Tajfel & Turner, 1986). A stronger partisan social identity thus leads to greater differentiation between groups, making defection from one's preferred group less likely (Greene, 2004). Early treatments of reference groups placed emphasis on face-to-face interactions and group cohesion whereas more recent work treats social groups as information cues (Tajfel, 1972; 1978) where the perception that one shares an interest with a group is sufficient to differentiate how people will act (Jackson & Sullivan, 1987). Hence, we hypothesise that voters will be affected by knowledge of the extent of political support for reform and be more (less) likely to support reform if they are told that their associated ideological group is supporting (opposing) reform, even when they are aware that all should benefit with reform.[4]

[4] That is, we argue that political polarisation on reform can have an effect independent of any signaling, cue, or heuristic effect that can occur when voters are uninformed about the choices before them (i.e. do not know which choice is best for society) and use endorsements and support by parties as shortcuts or devices to deal with their information uncertainty. In our experimental design voters have full information on the likely effects of reform. While they may not know which party will receive the differential benefit from reform, they can perceive that reform is better for all voters than non-reform.

Our second main hypothesis concerns the source of the effects of polarising information. That is, we contend that polarising information affects voter preferences and choices primarily when reform also involves some differential benefit to the political parties that are the main proponents of the reform. The evidence from Egypt (discussed in the Introduction) and other situations where reform is politicised suggests that reform is supported by political parties in power and opposed by those not in power. Enacting reform may be a benefit to all or nearly all in a country, but being in political power can allow those in the government to use their control over government resources and influence to benefit to a greater extent from the reform than those out of power. Hence, we expect polarising information to have a greater effect on voters when there are such possible differential effects; when supporters of reform benefit more than the opposition, even though all ultimately benefit. Related to this hypothesis, we expect that voters are more willing to acquire polarising information when such differential benefits exist. We summarise our predictions below:

Prediction 1: (a) *Polarising information will affect voter views and behaviour when voting over reforms that benefit all, (b) but primarily when there are differences in the benefits from reform by political party.*

Prediction 2: *Voters are more willing to seek out costly polarising information on reforms that benefit all when there are differences in these benefits by political party.*

4.4 Experimental Design

We faced a number of issues in designing an experiment that tests our two predictions above. First, we needed to design a voting situation similar to that faced when voting

over reform. Second, we needed to be able to measure our subjects' ideological preferences and to assign them to political groupings such that we could then manipulate information they had about support for reform across political groupings. First we explain how we measured ideological preferences, second we discuss the voting game, and third we describe how we combined the two in order to manipulate polarising information.

4.4.1 Measuring Political Preferences

The experiment was conducted at Cairo University in early May 2014 over a 12-day period. The time period is important to the context of the experiment and the difficulties in measuring political preferences as classes had ended early and exams were being administered so that the university could close early in order to prevent possible protest or unrest on campus, well ahead of the May 26-28 presidential election in which Sisi faced Egyptian Popular candidate Hamdeen Sabahi. In June 2013, Sisi had deposed the previous elected president Morsi (from the Muslim Brotherhood) in a military-led coup. The Muslim Brotherhood's banned Freedom & Justice Party did not participate in the May 2014 election. As expected, Sisi won the election with almost 97% of the vote and turnout was approximately 47.5%. Hence the period in which the experiment was conducted was a period in which there was both political tension in Egypt as there were protests and some acts of violence by Morsi supporters, yet also strong military control and a wide perception that Sisi would be elected to continue his policies.

Because of this tension, to classify subjects we avoided using questions about partisan affiliation or voting behaviour. Instead we created three hypothetical university

societies – each with different activities – that to a great extent match the three political ideologies dominating political life in Egypt: "Deep State", "Liberal", and "Islamist". For example, one activity of society 'Z' (which corresponds to Islamist ideology) is to organise activities to learn reciting the Quran; society 'Y' (which leans toward liberalism) organises student parties and holds talks over controversial novels, and society 'X' (deep state/old regime) hosts 'popular' cabinet ministers to give talks[5]. We then asked subjects – based on their consideration of the activities of each society – to indicate which society they would join if given the choice. Note that the societies were always called simply X, Y, and Z, and never labeled their ideological names of Deep State, Liberal, and Islamist, respectively. All these decisions, as in all of the decisions in the experiment, were made privately by subjects over a closed computer network, in separated booths by subject id number. No individual subject's choices were revealed to other subjects or recorded by name.

To make sure that the activities of these societies distinguished between subjects along the ideological lines we postulate, a survey was conducted on a sample of students prior to conducting the experiment as a manipulation check as to how far these activities correspond to their actual voting behaviour and views of respondents of current events in Egypt. Based on the results of the manipulation check, some activities of the hypothesised societies were amended. We also conducted a similar survey at the end of each session on the last day of the experiment as an *ex post* check as well. We found that society choices were roughly equally distributed across subjects with 32% choosing the Deep State Society (X), 32% choosing the Liberal Society (Y), and 36% choosing the

[5] See appendix E for the list of activities of each society.

Islamist Society (Z). Appendix E presents the final list of activities and results from the survey.

Subjects were paid a fixed amount of 10 Egyptian pounds for choosing a society (all payments were made after the experiment was completed).[6] These procedures were made clear to the subjects beforehand so that they were free to express their choices and their only motivations in those choices should have been intrinsic.[7]

4.4.2 Creating a Voting Game over Reform

In order to create a voting situation similar to reform, we first created a "status quo" environment in which reform is needed. That is, after choosing membership in a society, subjects engaged in an extremely simple real-effort task for which they were paid a fixed piece rate of 4 Egyptian pounds for each successfully completed. The task consisted of adding or subtracting two numbers 12 times, with all answers in single digits (a list of the problems used is provided in Appendix E).[8] Subjects were given 5 minutes to complete the task. The task did prove to be extremely easy, with only about 3% of subjects completing less than 10 problems and nearly 79% completing all 12 problems. Subjects therefore earned on average approximately 47 Egyptian pounds answering these first 12 problems.

[6] The exchange rate between the Egyptian pound and the U.S. dollar at this time was 1 USD = 7.0072 EGP.

[7] Given that the experiment was conducted over a few days, it was possible that subjects in later sessions learned that they would be making these choices and the implications for such choices in the voting (as discussed below). However, we do not observe any evidence of strategic behaviour in these later groups in their society choices. Furthermore, in the ex post survey given on the last day we find coherence between political preferences and society choices as in the manipulation check. Finally, note that the experiment was conducted fully in Arabic and only Egyptians not currently engaged in classroom instruction at the university were present during the sessions.

[8] In early trials with 45 subjects, we considered slightly more difficult problems with a shorter time limit. Given the difficulty subjects had with these questions, we revised the design to use the easier questions we report. The data from these trials are available on request.

After the twelfth problem, subjects were asked to continue the task for another 12 times, but allowed to vote between two different scenarios for payment, Options A and B. Abstention was not allowed and the decision was made by majority rule. Given that there were 15 voters in each voting group, there were no ties. Under Option A, the piece rate was cut in half to 2 Egyptian pounds, while under Option B (Reform) the piece rate was kept the same, but subjects first had to pay a fixed up-front fee of 10 Egyptian pounds. Subjects were told that the fees collected when Option B was selected by the majority would be used to subsidise activities supported by the society, which provided the most votes in favour of Option B. If two societies tied for the most votes for Option B, the experimenters kept the money. Note that no deception was involved in the experiment and the fees were used as described if Option B was selected by the majority. The fee, then, represented the cost of reform, and the distribution of the fee to activities supported by the society that voted most in favour of Option B represented the differential benefit/reward. The reduction in the piece rate in Option A captured the costs of not engaging in reform. Thus, the framing of the voting game captured the situation where reform is required to maintain the status quo, but is costly and has differential benefits to the party in power.

Given the size of the fee, piece rates, simplicity of the task, and their previous performance in the task, the expected payoffs to almost all subjects was greater under Option B than Option A (even with the fee and the fact that not all benefitted from the

fee). Hence, the expected payoff maximizing choice was for voters to almost all vote for reform, Option B.[9]

4.4.3 Manipulating Polarising Information

We designed two principal treatments (*Information* and *Baseline*) in order to manipulate the degree to which voters perceived the societies as polarised over reform. In the *Information Treatment*, before subjects voted (but after being explained the differences between Options A and B) subjects were given the following information (in Arabic): "The Society that voted most for Option B was Society Z and the Societies that voted most for Option A were Societies X and Y." The information provided to the subjects was truthful and based on voting which occurred in preliminary trials.[10] Subjects were also shown again descriptions of the three societies and their activities as well as their own society choice. We conducted two sessions in the *Information Treatment*. In each session two groups of 15 subjects played the voting game independently.[11] Hence, a total of 60 subjects participated in the *Information Treatment*.

[9] Only two subjects out of 405 across sessions earned less than 24 Egyptian pounds in the first task part of the experiment; almost 97% earned 40 Egyptian pounds or more. Hence, even with the fee, Option B had a 10 to 18 pound advantage over Option A and a subject should be extremely risk averse to prefer Option A to Option B. As discussed below, we attempted to measure risk aversion to control for differences due to risk preferences, although we find no evidence to support risk aversion explaining votes for Option A.

[10] As will become clear in the results section, in the *Baseline Treatment* subjects actually voted the opposite of the information we provide. The preliminary trials from which the information was provided used more difficult problems and a piece rate under Option A of 3 Egyptian pounds. We changed the design of the experiment after these trials in order to reduce the possible influence of risk aversion and increase the benefits to all subjects from supporting Option B.

[11] The experiment was programmed in z-tree, see (Fischbacher, 2007.) The laboratory consisted of 30 workstations divided by privacy partitions. Each session, subjects were randomly assigned to one of 2 groups, each with 15 subjects. Subjects did not know which of the other 30 subjects were in their group. Instructions (in Arabic) appeared on the subjects' screens and were also read aloud by the same individual in all sessions and treatments. Subjects were also given quizzes during the experiment to ensure they understood the instructions and could not proceed unless they gave correct responses. The full instructions are provided in appendix E, and the z-tree program is available on request from the authors.

In the *Baseline Treatment* subjects were not provided with this information prior to voting. As with the *Information Treatment*, a total of 60 subjects participated in the *Baseline Treatment* (again in groups of 15). In the *Baseline Treatment*, subjects were reminded of their society choice and the activities of the three societies prior to voting, as in the *Information Treatment*. Hence, the only difference between the two treatments was the one sentence revealing the results of previous voting divided by society affiliation, and comparing voters' choices between these two treatments allows us to measure the effect of polarising information. In the next Section we compare their choices in two ways. First, we have their revealed preferences in their voting behaviour; their vote choices. Second, at the end of the experiment we asked them to explain their vote choices. Specifically, we asked the subjects (in Arabic): "What were your reasons for voting for the option you chose?" Their answers to this question provides us with a measure of how much they were thinking about the information during the experiment and the influence of the information on their thinking of the choices between Options A and B.

4.4.4 Measuring the Effect of Differential Benefits

Comparing the *Information* and *Baseline Treatments* addresses the first part of Prediction 1 – whether polarising information affects voters' views and choices on reform. To investigate the second part of Prediction 1 – that polarising information is important when there are differential benefits, we created two additional treatments: *Information No Reward* and *Baseline No Reward*. These treatments were exactly like their counterparts, *Information* and *Baseline*, except that the fee for Option B was not given to any of the societies but returned to the experimenters. Hence, although as above almost

all subjects are better off with Option B as compared to Option A, there were no additional benefits to the society that most voted for Option B. That is, in the *Information No Reward Treatment* subjects were shown the same sentence above and reminded of their Society choices and Society type, while in the *Baseline No Reward Treatment* subjects were not given this information. By comparing the *Information No Reward Treatment* to the *Baseline No Reward Treatment* we are able to determine the effects of the polarising information when there are no differential benefits and by comparing the *Information No Reward Treatment* and the *Information Treatment*, we can measure the additional effect of differential benefits (as well as when we compare the two *Baseline Treatments*). Thus, we can address the second part of Prediction 1 above. Ninety subjects (6 groups) participated in the *Information No Reward Treatment* and 75 subjects (5 groups) participated in the *Baseline No Reward Treatment*.[12]

Our Prediction 2 argues that voters are more likely to seek out polarising information when there are differential benefits. In order to evaluate this prediction we created two more treatments: *Information Choice* and *Information Choice No Reward*. These two treatments were the same as the *Information* and *Information No Reward Treatments*, respectively, with the exception that not all subjects automatically saw the polarising information. Instead, after being explained how Options A and B worked, but before voting, subjects were given the opportunity to purchase information as to how previous voters had chosen by society.[13] We used a Becker-DeGroot-Marshak (1964)

[12] One group of 15 subjects in the Baseline No Reward Treatment were given more difficult problems in the task part of the experiment (and a higher payoff for Option A) due to a computer glitch such that their data is not comparable to the other treatments.

[13] Note that we conducted the choice treatments prior to the information treatments without choice in order to prevent possible cross effects if subjects knew someone who had participated in an earlier session.

(hereafter, BDM) procedure to elicit subjects' willingness to pay for the information. That is, subjects were asked if they wished to purchase the information. If so, then subjects were asked to name a demand price between 1 and 5 Egyptian pounds for the information. A price between 1 and 5 had been randomly drawn prior to each session (the price was a new random draw for each session) and recorded on a white board but hidden by a sheet of paper[14].

After each subject named his or her price (privately via the computer network), the previously chosen price was revealed. Subjects whose demand prices were equal to or higher than the chosen price, had their payoffs deducted by the chosen price and were shown the polarising information. Subjects whose demand prices were lower than the chosen price or who chose not to name a demand price did not see any information.

The comparison of the treatments *Information Choice* and *Information Choice No Reward*, then, allows us to determine the extent that differential benefits affect the demand prices of subjects for the polarising information, specifically, Prediction 2. These treatments also allow us to compare the behaviour of subjects who willingly purchased the polarising information, at a cost, to those who were randomly assigned to receive the information by being assigned to one of the other information treatments. That is, we can determine if those who select to receive the information are differently affected by the information. Such a question may be relevant in naturally occurring elections where individuals may choose or not to receive polarising information prior to voting. Hence, comparing informed voter behaviour in *Information Choice* and

[14] We used this procedure to avoid using lottery mechanisms such as tossing a die or coin, which might have been offensive to some of the subjects since Islam prohibits gambling. We were especially concerned about this issue given that we were asking questions related to religion in the component of the experiment where we measured ideological preferences.

Information Treatments (and informed voter behaviour in *Information Choice No Reward* and *Information No Reward Treatments*) allows us to measure the effects of self-selection. Sixty subjects (4 groups) participated in the *Information Choice Treatment* and 60 (4 groups) participated in the *Information Choice No Reward Treatment*. Table 4.1 below summarises our 6 treatments.

Table 4.1: Summary of Treatments

Treatment Name	Information Provided	Differential Benefits	Choice	Sessions	Groups	Total Subjects
Baseline	No	Yes	No	2	4	60
Information	Yes	Yes	No	2	4	60
Baseline No Reward	No	No	No	2.5[15]	5	75
Information No Reward	Yes	No	No	3	6	90
Information Choice	Yes	Yes	Yes	2	4	60
Information Choice No Reward	Yes	No	Yes	2	4	60
Total				13.5	27	405

4.4.5 Control Measures

Although we use random assignment as our principal method to control for individual specific variation, which might affect behaviour, we also attempted to control for various

[15] As noted previously, in one of the sessions there was a computer glitch, which invalidated the data for one group of 15 subjects assigned to the Baseline No Reward Treatment. Therefore, we only report the data from one of the groups in this session.

individual differences, which we suspected might affect the subjects' choices and behaviour. Specifically, we surveyed subjects after the experiment as to their age, gender, and religion. A number of studies have shown that women tend to be more risk averse than men and if a subject was Christian or another non-Islamic religion, then he or she may be less likely to choose the Islamist society. Our subjects were largely female (nearly 71%) and Muslim (94%). The subjects ranged from 18 to 25, with a mean age of 20.5 and a standard deviation of 0.77.

We also attempted to measure subjects' risk preferences as more risk averse subjects may be less willing to choose Option B. After the subjects chose their ideological societies and before beginning the first set of mathematical problems, we used a variant of the Eckel and Grossman (2008) risk attitude decision-making task.[16] In our variant, subjects were shown six different routes to the airport (labeled routes 1-6), with different taxi fares based on the degree of congestion of each route, which varied in uncertainty (congestion could be high resulting in a high taxi fare or low resulting in a low taxi fare), and then were asked to choose one route. The routes were ordered such that more risk averse subjects should choose lower numbered routes. They were given an endowment to pay the taxi fare and could keep the remaining endowment. Before each session, for each route we randomly chose a traffic condition (either high or low) by tossing a coin. The information was written on a white board but hidden from the subjects behind sheets of paper. Then after subjects chose a route, we revealed the traffic

[16] We thank Chetan Dave for suggesting this version of risk preference measurement.

conditions[17]. Our subjects did appear to be strongly risk averse, almost half chose route '1' (49%), although gender correlates some with this choice with women choosing route '1' 50% of the time and men choosing route '1' 45% of the time.

Each of the 405 subjects participated only once in the experiment. At the end of the experiment, subjects were paid in a secure place and the total earnings were on average $15. The experiment lasted for approximately one hour and was conducted in Arabic with the same individual reading the instructions in all sessions. None of the participants were students in the experimenter's classes. All sessions were conducted in the Laboratory of the Faculty of Economics and Political Sciences at Cairo University.

4.5 Results

4.5.1 Evaluation of Prediction 1

4.5.1.1 Evaluation of Prediction 1(a): Explaining Vote Choices

We begin our discussion of the results of our experiment with a comparison of our two principal treatments, the *Information Treatment* and the *Baseline Treatment*. As discussed above, we have two measures of how voters responded to the polarising information; their explanations of their choices and their actual choices. First we discuss how subjects explain their vote choices and second we discuss how they actually chose. We classified these explanations into four categories: *Non-Political Private; Political Own Society; Political All Societies;* and *Unclear*. Explanations classified as *Non-Political Private* discussed only the anticipated earnings to the subject personally from

[17] Again, we used this method to avoid having subjects engage in obvious gambling, which some might have felt objectionable, especially given the discussion of religion in some of the other questions they answered.

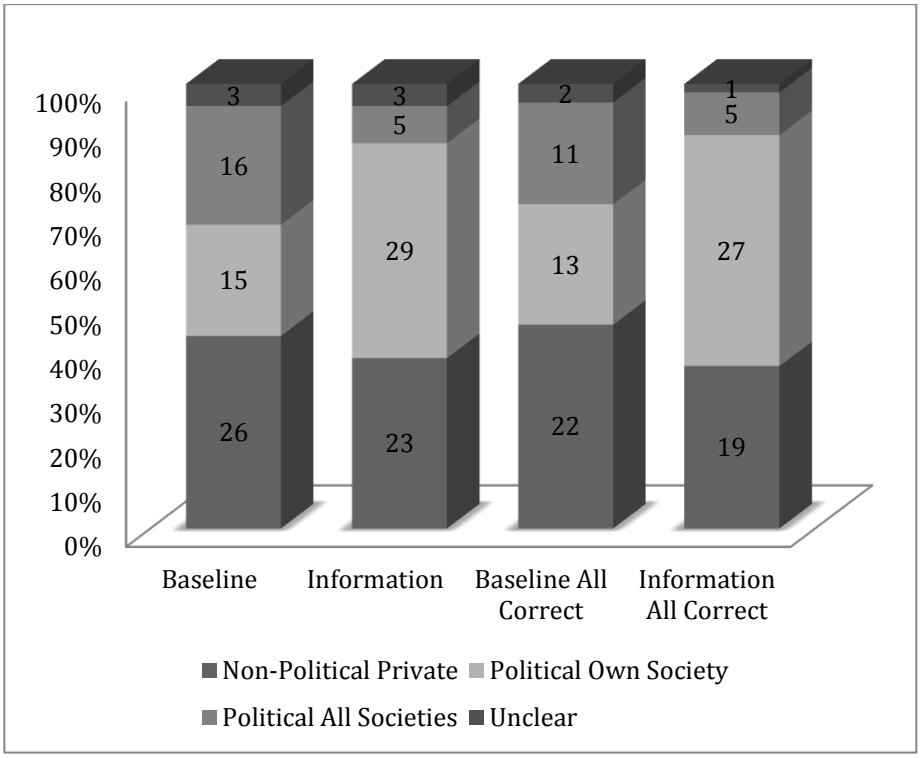
the two options and did not mention society benefits at all. For example, one subject who voted for B wrote: "The reward from Option A will be 2*12=24, and from option B will be 4*12-10=38." Another subject who voted for A explained: "I chose A to avoid the risk of losing 10 pounds."

Explanations classified as *Political Own Society* mentioned the benefits to their own society if Option B was passed and their society voted the most for Option B. For instance, one subject who voted for A noted: "Because the group I belong to is supporting option A in the stated example." Another subject who voted for B, remarked: "I chose society Z because of its religious nature. I voted for B because my society made this choice before." We also classified subjects who may also have mentioned their private benefits as well. For example, one subject stated: "I voted for B because it will allow me to support the society that I like with a small amount of money, and also because it gives a bigger reward than A."

Explanations classified as *Political All Societies* suggested that they were voting for B (at least partly) to benefit some society, acknowledging it may not be their own. For instance, one subject wrote: "Because it gives a bigger reward and supports a society with some useful activities in the university." Another explained: "I voted for B to get a bigger reward, 38 pounds instead of 24, especially since I know that I will answer all questions correctly. And also, option B will benefit society (Y) and I never stand in the way of others' benefit even if it was not my society. But in option A, no one will benefit." Finally, explanations classified as *Unclear* did not provide enough information to be categorised. For instance, one subject said simply: "I thought it might be chosen" and another remarked: "It matches my desires to a great extent."

We find significant differences in the types of explanations between the *Baseline* and *Information Treatments*, as shown in Figure 4.1 below.[18] In the *Baseline Treatment* the modal response is to only mention private benefits (43% of the explanations), while in the *Information Treatment* the modal response is to include a mention of one's own society (48%) and only 38% mention private benefits only. The increase in mentioning one's own society appears strongly related to the decrease in mentioning benefits to all societies (in the *Baseline Treatment* explanations refer to all societies 27% of the time, whereas in the *Information Treatment* they do so only 8% of the time). Thus it appears that receiving polarising information clearly structures the ways in which voters describe the two choices.

Figure 4.1: Distributions of Voter Explanations in the *Baseline* and *Information Treatments*



[18]For the comparison overall the Pearson χ^2 statistic = 10.40, Pr = 0.015 and Fisher's exact test yields Pr = 0.012.

It may be that voters who performed poorly in the math problems are driving this result. So we also compared the distribution of explanations of just those subjects who received perfect scores on the first set of math problems, that is, answered all 12 correctly (also shown in Figure 4.1 above). We find that our results are robust to this restriction; the polarising information results in significantly more voters mentioning their own society (52% among informed compared to 27% in the baseline), less their private benefits (37% among informed compared to 46% in the baseline), and less the benefits to all societies (10% among informed compared to 23% in the baseline).[19]

We also estimated a multinomial logit of explanation type as a function of how many problems a subject answered in the first set of math questions and whether a subject was informed, female, and chose the first taxi route. We find that none of the control variables are significant and that the qualitative results from the polarising information found above continue to hold although not significant at conventional levels (significance levels of being informed range between 10 and 5%). The detailed results from the estimation are available from the authors.

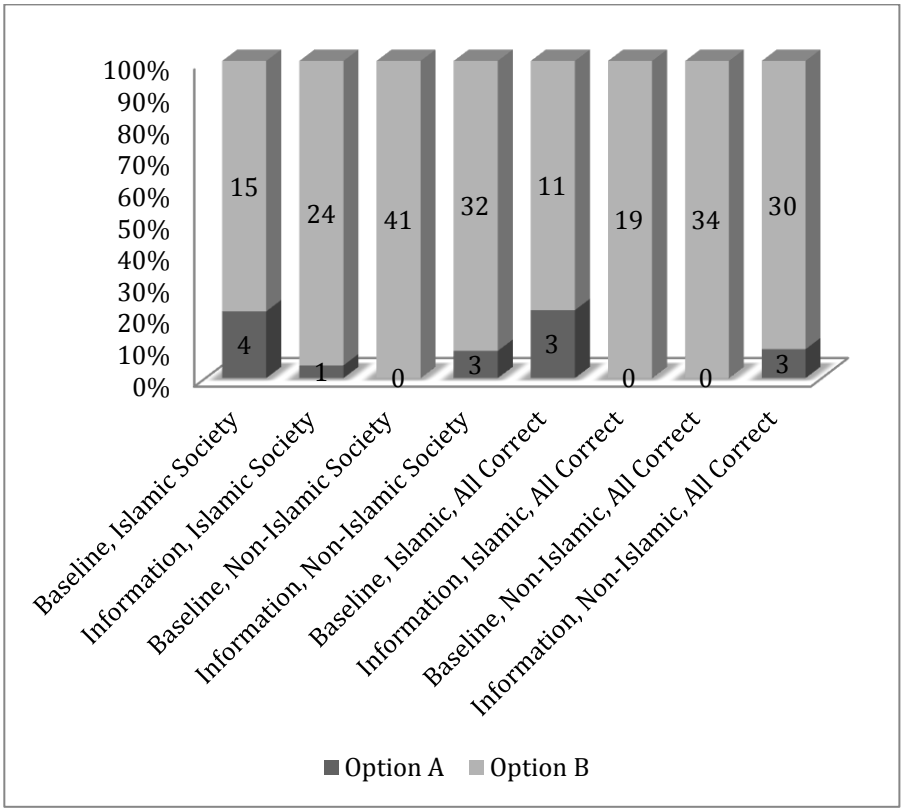
4.5.1.2 Evaluation of Prediction 1(a): Voting Behaviour

We turn now to examine whether the polarising information also affects how voters choose. Recall that the polarising information reveals to voters that Society Z (the Islamist Society) votes the most for Option B (and presumably would receive the differential benefit if Option B is selected) and that Societies X and Y vote the most for Option A. Hence, if the polarising information affects voter behaviour, then we expect

[19] The Pearson's χ^2 statistic for the comparison 7.55, Pr = 0.06 and the Fisher's exact test yields a Pr = 0.04.

that voters in Society Z in the *Information Treatment* will be more likely to vote for Option B than they are in the *Baseline Treatment* and that voters in Societies X and Y will be less likely to vote for Option B than they are in the *Baseline Treatment*. Figure 4.2 below summarises voting behaviour in the two treatments by whether a subject is a member of the Islamic Society or not. Figures 4.3 and 4.4 also show the distribution of B votes, in the two treatments, by both Islamists and non-Islamists, respectively.

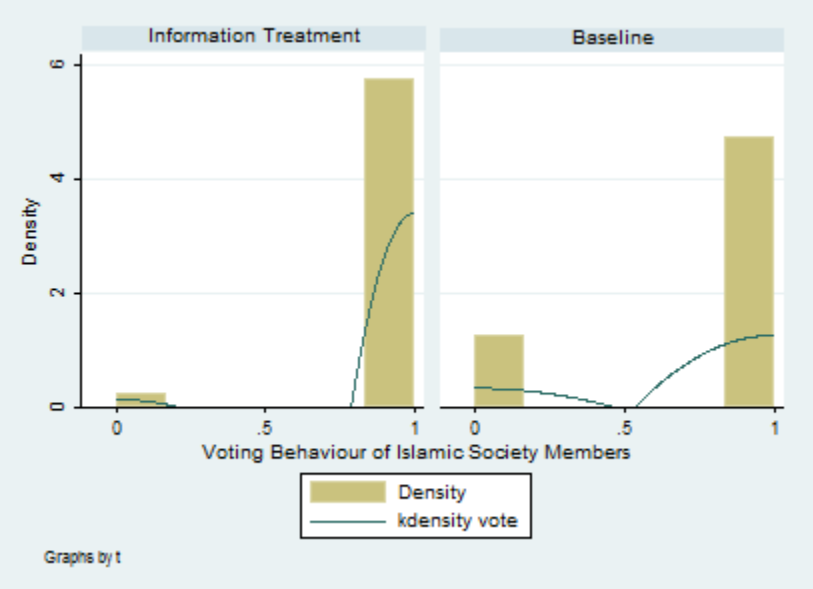
Figure 4.2: Voting Behaviour in the *Baseline* and *Information Treatments*



We find significant evidence supporting our prediction. That is, we find higher support for Option B among Islamist Society members in the *Information Treatment* (96% in the *Information Treatment* compared to 79% in the *Baseline Treatment*) and lower support for Option B among non-Islamist Society members in the *Information*

Treatment (91% in the *Information Treatment* compared to 100% in the *Baseline Treatment*). Both differences are significant using a one-tailed test of proportions, a one-tailed t-test on equality of means, a non-parametric test on equality of distributions, and Fisher's exact 1-sided test.[20]

Figure 4.3: Distribution of B-Votes by Islamists

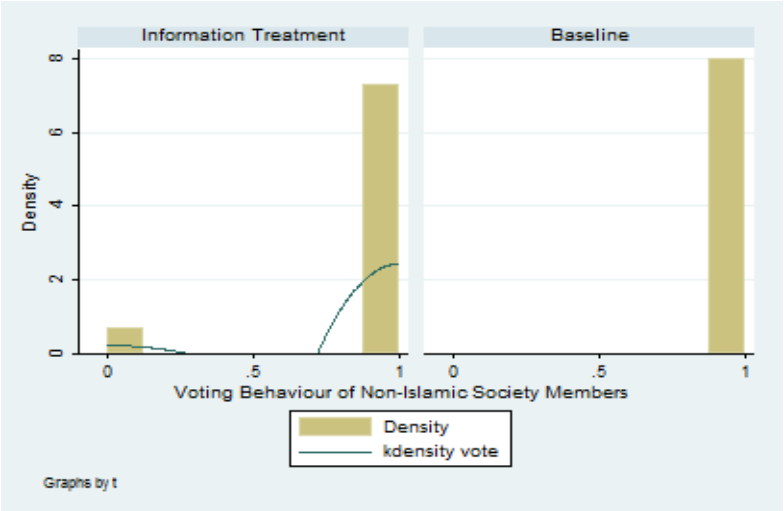


When we restrict our attention just to the subjects who answered all math problems in the first set correctly (shown in Figure 4.2 as well), we find the same relationships, also significant. Islamist Society members who answered all problems correctly chose Option B 100% of the time when they received polarising information compared to only 79% of the time when not informed, while non-Islamist Society members who answered all problems correctly chose Option B 91% of the time when

[20] For the test of the proportions for Islamic Society members the z statistic = 1.77, Pr = 0.04 in a one-tailed test and for non-Islamist Society members the z statistic = 1.91, Pr = 0.03 in a one-tailed test. For the t-test for Islamic society members, the t statistic = 1.78, Pr = 0.04 in a one-tailed test, and for non-Islamist Society members, the t statistic = 1.93, Pr = 0.03. For non-parametric ranksum test for Islamic society members the z statistic = 1.75, Pr = 0.08, and for non-Islamist Society members, the z statistic = 1.9, Pr = 0.06.Fisher's exact one-sided test for Islamic Society members yields Pr = 0.10 and for non-Islamic Society members Pr = 0.09.

they received polarising information, but 100% of the time when not informed.[21] Thus, we find supportive evidence of an effect on voter choices, although weak.

Figure 4.4: Distribution of B-Votes by non-Islamists



We also estimated a probit analysis of vote choice for Islamist Society members. Model 1 includes just a dummy for the Information treatment. Model 2 includes in addition other controls such as how many problems they answered correctly in the first set of problems, whether they were Female, and chose taxi route 1. Table 4.2 shows the results of this regression. Model 1 shows that, when informed, Islamists are 17% more likely to vote for option B (p=0.09). In model 2, however, we find that none of the control variables are significant, but that informed Islamist Society members are 21% more likely to vote for Option B at the 5% level (z statistic = 1.95) than uninformed ones.[22]

[21] For the comparison with Islamist Society members, the χ^2 statistic = 4.48, Pr = 0.03, Fisher's exact test yields Pr = 0.07 and for the comparison with non-Islamist Society members, the χ^2 statistic = 3.24, Pr = 0.07, Fisher's exact test yield Pr = 0.11.

[22] We could not estimate the same probit for non-Islamist Society members because of insufficient variation in the data.

Table 4.2: Effect of information on Islamists' Voting Behaviour

B-Vote	(1)	(2)
Informed (D)	0.171*	0.208***
	(0.094)	(0.004)
Taxi Route 1 (D)		0.04
		(0.52)
Female (D)		-0.07
		(0.33)
All math questions correct (D)		0.06
		(0.26)
Observations	44	44
Pseudo R^2	0.1028	0.2364
Log Likelihood	-13.977	-11.89

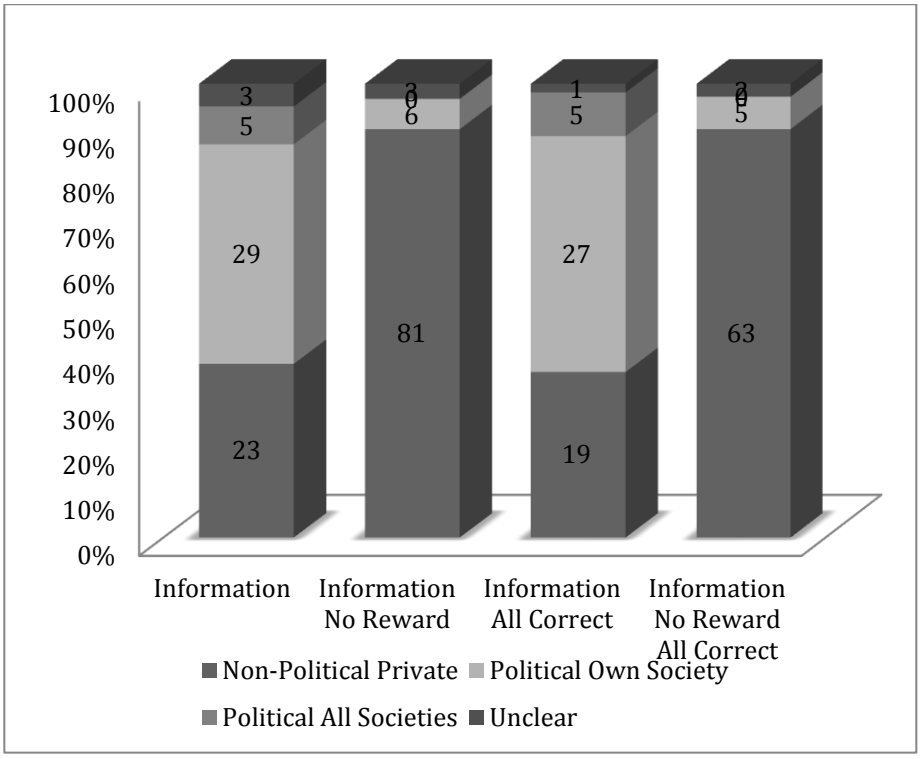
4.5.1.3 Evaluation of Prediction 1(b)

We find that the polarising information appears to have a large effect on how voters describe their vote choices and a smaller, however still significant, effect on how voters vote. To what extent is this effect driven by the fact that under Option B, although all benefit, there is a differential gain to the society which votes the most for that option? In order to examine this question, we make two comparisons. First we compare the voter explanations in our *Information Treatment* with the *Information No Reward Treatment* as shown in Figure 4.5 below. We find significant differences.[23] In the *Information No Reward Treatment* the vast majority of subjects provide an explanation that only refers to their personal private benefits from the options (90%) and only about 7% refer to their own society in explaining their vote (recall these voters have received information about

[23] Pearson's χ^2 statistic for the comparison = 48.4, Pr = 0.00 and Fisher's exact test yields Pr = 0.00.

their society's position on the two options). None of the voters mention all societies. Clearly the differential benefit increases the tendency of voters to explain their positions by society. The results are equally significant if we restrict to the subjects who answered all 12 of the first set of math problems correctly as shown in Figure 4.5.[24]

Figure 4.5: Distributions of Voter Explanations in the *Information* and *Information No Reward Treatments*



Note that subjects in the *Baseline No Reward Treatment* never explained their vote in reference to the societies given that they received no polarising information and there were no differential benefits to the societies (no reward). Hence we can think of the 7% who mentioned their society in the *Information No Reward Treatment* as a measure of those who are viewing the options in society terms purely because of the polarising

[24] Pearson's χ^2 statistic for the comparison = 42.33, Pr = 0.00 and Fisher's exact test yields Pr = 0.00.

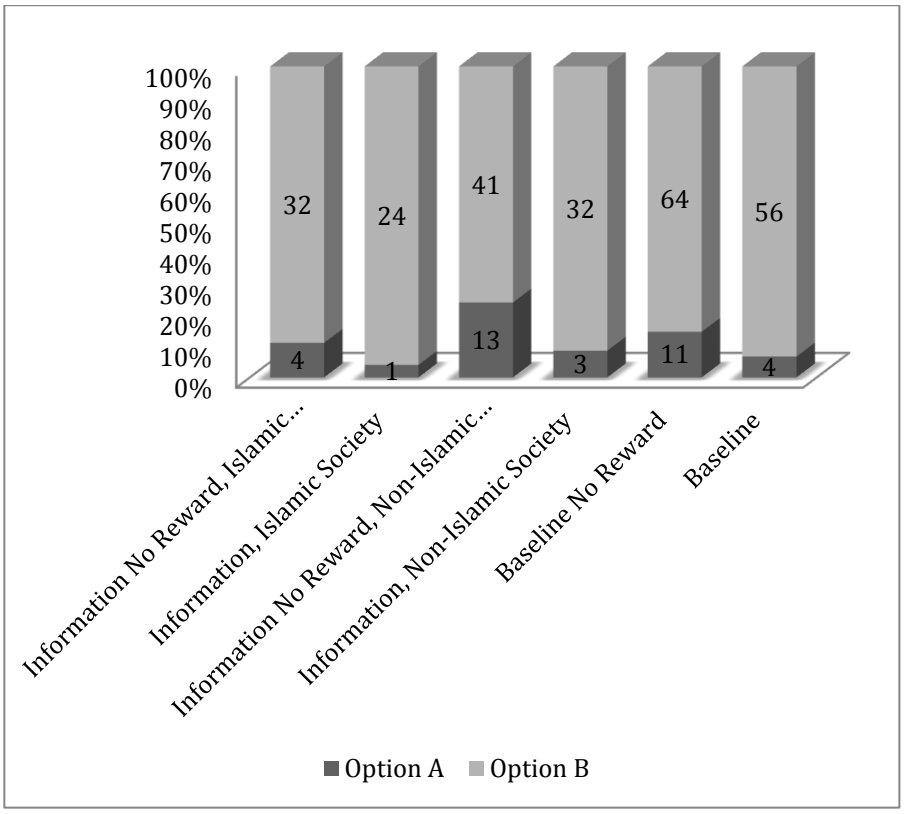
information. Therefore, the difference between 7% and the 48% who mentioned their own society in *Information Treatment* can be viewed as the effect of the reward in addition to the polarising information. Alternatively, we can also think of the 25% who mention their own society in the *Baseline Treatment* as compared to the *Baseline No Reward Treatment* as the percentage who are polarised simply by the existence of a differential reward without polarising information. Obviously the results suggest an interactive relationship between polarising information and differential benefits.[25]

What do we find when we compare voting behaviour in these no reward treatments with the reward treatments? Figure 4.6 compares voting behaviour in the no reward treatments with their respective reward treatments. The behaviour is broken down by whether a subject is a member of the Islamist Society (Z) in the treatments with information, but not broken down in the non-information, baseline treatments (since there is no reason to expect a difference in behaviour by society choice). We find in every comparison the differential benefit increases votes for Option B. For Non-Islamist Society Members for example, the mean votes for option B is 76% in the absence of differential benefits and rises to 91% in the presence of differential benefits. This difference is statistically significant in a one-tailed Fisher exact test (Pr = 0.054). When we restrict the observations to those who answered all 12 math problems in the first set correctly, we find similar relationships (with differential benefits 91% non-Islamist Society members who answered all problems in the first set correctly vote for Option B as compared to 84% without differential benefit and with differential benefits 100% of Islamist Society members who answered all problems in the first set correctly vote for

[25] We are unable to estimate a larger multinomial logit estimating these effects in combination on explanation types with controls due to a lack of sufficient variation in the data.

Option B as compared to 89% without differential benefits), although the differences are not significant. Using a probit analysis to estimate the effect of differential benefits on the vote choice of non-Islamists, I find evidence that differential benefits increases the likelihood of non-Islamists voting for option B by 16% (std. err= 0.074, p= 0.062)[26].

Figure 4.6: The Effects of Differential Benefits on Voter Behaviour



In summary, we find evidence that differential benefits have a large effect on how voters view the choices between options; they are much more likely to mention their own society in explaining their vote choices when there are differential benefits to reform. They are also slightly more likely to vote for reform when there are differential benefits,

[26] We were unable to estimate a larger probit analysis of vote choice of these effects in combination with controls due to a lack of sufficient variation in the data.

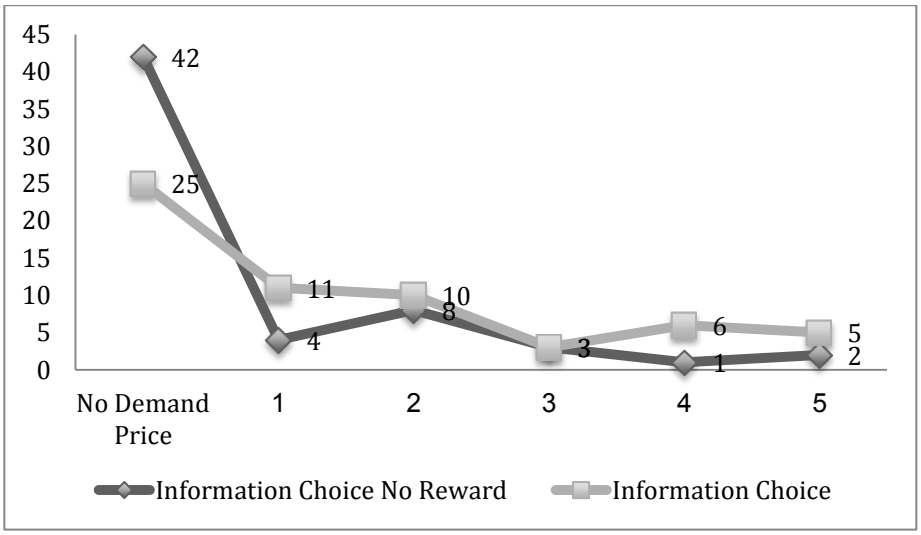
although the difference is not generally significant. The evidence suggests that the effect of differential benefits on vote choice appears to offset to some extent the tendency of non-Islamist voters to react to polarising information by voting for Option B less often as found above.

4.5.2 Evaluation of Prediction 2

We now focus on Prediction 2, that voters will be more willing to acquire costly polarising information when there are differential benefits from reform. In order to evaluate this prediction, we compare the two treatments in which voters can choose whether to purchase the polarising information or not, the *Information Choice* and *Information Choice No Reward* Treatments. Specifically, we examine the effect of rewards on the demand prices of the subjects. Figure 4.7 summarises the demand prices by treatment. We find that significantly more subjects choose a positive demand price and higher demand prices on average (the mean demand price in the *Information Choice No Reward Treatment* is 2.39 and is 2.54 in the *Information Choice Reward Treatment*).[27] Hence it is clear that significantly many more subjects value the polarising information when reform has differential rewards.

[27] The Pearson's χ^2 statistic for the comparison is 12.66, Pr = 0.03 and Fisher's exact test yields Pr = 0.02. When we regress demand price on treatment including controls for gender and our risk aversion measure we find that the treatment effect statistic equals 2.77, Pr = 0.01. None of the controls are significant.

Figure 4.7: Demand Prices in the Choice Treatment



Our choice treatments also allow us to compare those who selected to receive the polarising information as compared to those who were given the information without a choice. Figures 4.8 and 4.9 present comparisons of explanations and voting behaviour, respectively, of informed voters in the choice treatments as compared to their no choice counterparts (i.e. *Informed Choice* compared with *Informed* and *Informed Choice No Reward* compared with *Informed No Reward*). We find little evidence of any selection effects. We find no significant differences between the explanations of those who selected to receive the polarising information and those who were shown the information arbitrarily. The only significant difference we find in voting behaviour is some slight evidence that Non-Islamist Society members who select to receive the information and there are differential benefits these voters are less likely to vote for Option B than those arbitrarily given the information.[28] However, when we compare Islamist and Non-Islamist Society members who are informed in either information choice treatment, we

[28]The Pearson's χ^2 statistic for the comparison = 4.27, Pr = 0.039. A one-sided Fisher's exact test yields Pr = 0.053.

find no significant differences. Finally, when we restrict our observations to those who answered all 12 of the first mathematics problems correctly, we find no significant differences in explanations or vote choices between those informed by choice and those informed arbitrarily.

Figure 4.8: Distributions of Informed Voter Explanations in the Informed Choice Treatments compared to their No Choice Counterparts

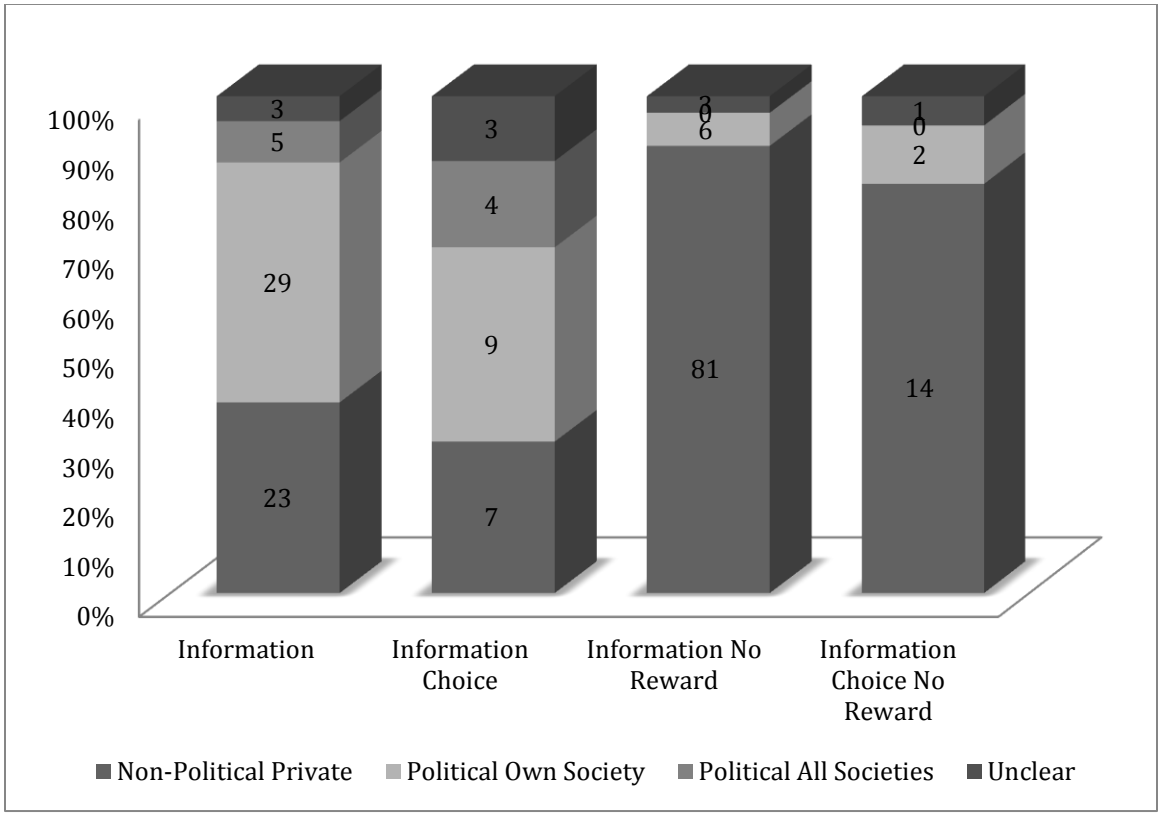
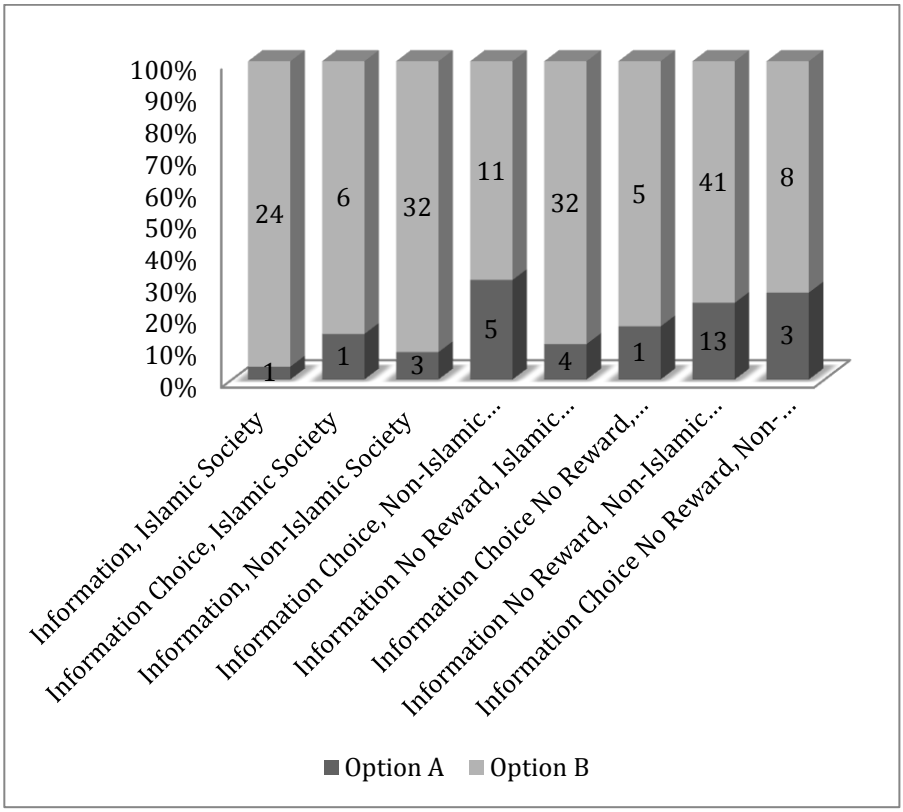


Figure 4.9: The Effects of Information Choice on Voter Behaviour



4.6 Concluding Remarks

One of the more puzzling aspects of political decision-making has been the inability of governments to pass reforms even when there seems to be widespread recognition that reform is needed. In this paper we investigate one possible source of the lack of action – polarisation on reform on non-relevant ideological grounds. We do so by using a novel approach of a combination of incentivised experiments with naturally occurring political ideological divisions in a polarised setting. We find that polarising information causes significant numbers of voters to view their positions on reform through ideological lenses and some voters to change their votes on reform even when the reform is clearly an improvement for them.

However, our evidence suggests that the influence of polarising information is highly interactive with the existence of differential benefits from reform. When reform offers differential benefits to the group of voters who are most in favour of reform (such as the party in power who enacts reform), then voters are most likely to see reform through polarised and ideological views and their votes are the most likely to be affected, even when reform has clear benefits for all voters, across ideological types.

Chapter 5

Negative Campaigning and Trust:

Experimental Evidence from Post-Revolutionary Egypt

5.1 Introduction

According to the World Values Survey (2008; 2012), people's beliefs are likely to play a key role in economic development, the emergence and flourishing of democratic institutions, the rise of gender equality, and the extent to which societies have effective governments. Indeed, evidence indicates that trust, which encompasses people's beliefs about others and their willingness to use that knowledge as the basis for action (Luhmann, 1982), contributes to economic, political and social success (Knack & Keefer, 1997b; Zak & Knack, 2001b).

Despite the above evidence on the importance of trust, data from wave 6, 2010-2014, of the World Values Survey (2012) show that 78.5 percent of Egyptians do not trust others[1]. This low level of interpersonal trust among Egyptians can thus have serious implications on the country's social capital, political transformation and thus economic development.

[1] When asked the question "Generally speaking, would you say that most people can be trusted or that you need to be very careful in dealing with people?" 78% of Egyptians answered that they need to be very careful.

Since 2011, negative campaigning has been on the rise in Egypt with elections witnessing a significant increase in the attack tone. Common attacks that were used included for example the following expressions, "Slaves of military boots", "Sheep", and "Retired terrorists". With the experience of free elections and the use of free campaign strategies being new to the Egyptian society since the ousting of its old authoritarian regime, this chapter consequently investigates the effect of different campaign environments/strategies, especially negative campaigning, on the level of interpersonal trust among Egyptians. Indeed, nowhere can democracy be better seen "in action" than during political campaigns (Gadarian & Lau, 2011). Although the conventional wisdom about negative political campaigning holds that it succeeds in achieving the consequences intended by its practitioners, many fear that it might have unintended but detrimental effects on both the economic and political systems (Lau *et al.*, 2007). Specifically, I contend that when potential candidates revert to negative campaigning, people's level of interpersonal trust in general gets affected.

Exposure to different kinds of campaign environments is however endogenous to the environment rather than randomly and exogenously assigned by the investigator. Consequently, the effect of the campaign environment on pro-social behaviour such as trust is extremely difficult to infer from naturally occurring data. A controlled environment is thus required if one seeks to examine such hypothesis.

Hence, I connect a classic paradigm from economics, the trust game of Berg et al. (1995), with a standard social psychological manipulation, a priming procedure. By doing so, I examine whether activating specific cognitive contents (negative and positive campaign ads in my case) via priming has an impact on the initial beliefs people form

about the trustworthiness of others. In this controlled environment, one can say that trust is present when one party (the sender/first mover) places resources at the disposal of another party (responder/second mover) under the expectation that this will increase the sender's payoff, and in the absence of any enforceable commitment by the responder.

To the best knowledge of the researcher, this study is the first to measure the effect of priming different campaign environments (negative and positive campaign ads) on the level of interpersonal trust, and the first to deploy laboratory experiments in an effort to understand the relationship between negative campaigning and trust. Specifically, I investigate my contention by considering the effects of negative campaigning on citizens' behaviour in a trust game. I do so using an economics-style incentivised laboratory experiment. In the experiment's main treatments, subjects are first asked some personality questions. They are then introduced to two videos that have some piece of news on two candidates competing in a hypothetical election for the president of the university's student union. They are then asked to play the trust game. The principal experimental manipulation is the content of the video they watch. That is, in the *Baseline Treatment*, subjects play the trust game without any prior information concerning potential candidates. In the *Positive Treatment*, subjects are given information about candidates where the content of the video is positive policy pledges. In the *Negative Personality Treatment*, the news coverage is negative claims about the personality of the candidates and in the *Negative Policy Treatment*; the videos are about negative claims with respect to the two candidates' policies.

I find experimental evidence that negative campaigning with respect to candidates' personalities has significant negative effects on how subjects play the trust

game. In other words, I find a negative effect of negative-campaign-priming on the amount sent by first movers to anonymous partners; approximately the amount sent is 13 percent less in the *Negative-Personality Treatment* than in the *Baseline Treatment* (p=0.008). Furthermore, I find significant effects of these three different campaign environments on voters' intensions to vote in the upcoming elections.

In the next section of this chapter, I briefly review the related literature on trust and negative campaigning. Section 5.3 outlines my theoretical argument. The experimental design and results are presented in sections 5.4 and 5.5, respectively. And section 5.6 concludes.

5.2 Related Literature

Trust and its complement, trustworthiness, are key concepts in both economics and political science because of their role in (i) the formation of social capital and civic engagement (Stolle, 1998), (ii) the reduction of the cost of exchange in daily market transactions (Knight, 2001; Sztompka, 1999), and (iii) the existence of stable political institutions (Putnam, 1993; 2000). Indeed, there has been evidence that trust has positive effects on economic growth, and that it contributes to economic, political and social success (Knack & Keefer, 1997a; Zak & Knack, 2001a).

Two distinct research methods have been used to explore and measure the concept of trust. The first is the early research method that treats trust as a perception of norms in a society and which uses survey questions to assess it[2]. The second is the recent research

[2] For forty years, the General Social Survey (GSS), World Values Survey (WVS), and American National Election Studies (ANES) have used the same questions to assess trust (Wilson, *et al.*, 2011.)

method that focuses on behavioural assessments of trust through the use of incentivised, economics-style laboratory experiments incorporating Berg et al. (1995) trust/investment game. According to this game, an individual decides whether or not to trust another by deciding to give him/her some or none of his endowment.

Since the mid-1990s, more than 150 experimental studies have examined the concept of interpersonal trust, with the standard trust/investment game of Berg et al. (1995) proving to be a valuable vehicle for following research (Wilson & Eckel, 2011). For instance, trust experiments have examined the relationship between personal characteristics and behaviour in the games (Bellemare & Kroger, 2007; Croson & Gneezy, 2009; Uslaner, 2002). Zak and Knack (2001a) for example, have used macroeconomic data and have found a strong relationship between the incidence of formal institutions and generalised trust across countries.

On the relationship between interpersonal trust and political institutions, literature extends back to Almond and Verba (Almond & Verba, 1963) who claim a strong correlation between citizen trust and democratic institutions. Recent work has examined the direction of this causality (Putnam, 1993; Rothstein, 2000). Nevertheless, the campaign environment has been largely neglected in this literature. In other words, no paper, to the best knowledge of the researcher, has examined the effect of different campaign environments (one of which is negative campaigning) on the level of interpersonal trust.

This chapter hence tries to bridge the gap in this literature. However, with exposure to different kinds of campaign ads being endogenous to one's environment (Zak

& Knack, 2001a), it is extremely difficult to infer the effect of different campaign ads on trust from naturally occurring data. A controlled environment that uses priming is thus required. Specifically, I use the priming techniques developed in social psychology to measure a citizen's trust in others given exposure to different campaign environments/ads. The manipulation used in this chapter derives from the priming literature (Bargh & Chartrand, 2000; for an example from the economics literature, see Benjamin *et al.*, 2010).

Indeed, the priming techniques developed in social psychology provide researchers with the tools to systematically and exogenously manipulate context and information processing and thus to investigate the formation of beliefs and preferences in highly controlled laboratory environments. For example, a recent paper by Dufwenberg et al. (2011) investigates social behaviour in the laboratory by changing the framing of the games being played. It concludes that framing effects are a two-part process where frames move beliefs which, in turn, shape motivation and choice. The results of such behavioural economics studies, together with the corresponding social psychology theories, can then be the foundation of new economic models that capture the concept of ''economic cognition''.

Moving on to studies on campaigning, research has shown that negative advertising [3] makes a greater impression on an audience than positive or neutral advertising, due to the greater weighting given to negative information over positive information by individuals while forming evaluations of social stimuli (Kellermann,

[3] Attack advertising is an aggressive, one-sided, assault designed to draw attention to an opponent's weaknesses in either character or issue positions Pfau, *et al.*, 1990..

1989; Lang *et al.*, 1995; Lau, 1982). Scholars in a number of disciplines have observed a "negativity bias," whereby audiences often give greater weight to negative information than to comparable positive information (Fiske, 1980; Holbrook *et al.*, 2001; Klein, 1991; Lau, 1982; 1985).

In fact, two strands in the literature on campaigning have been mushrooming in the last three decades. The first strand focuses on the effects of negative ads on turnout, citizen participation and democratic processes (Ansolabehere & Iyengar, 1996; Ansolabehere *et al.*, 1994). Ansolabehere et al. (1994), for instance, using a lab experiment, have found that exposure to negative ads decreased intentions to vote by 5%. Other studies, on the contrary, see negative campaign ads as stimulating participation (Finkel & Geer, 1998; Freedman *et al.*, 2004). Their justification for the increased level of participation is summarised in the following three points: (i) Negative advertising conveys a significant amount of policy and information to voters (Brians & Wattenberg, 1996; Lipsitz *et al.*, 2005; Sides *et al.*, 2010; Stevens *et al.*, 2008), (ii) The evidence that negative ads are given more weight in political information processing (Lang *et al.*, 1995; Lau, 1982), and (iii) Negative ads may produce stronger emotional responses than positive ones (MacKuen & Marcus, 1994).

The second strand in the literature has been concerned with the effect of negative campaign ads on candidate evaluations; both the sponsor and the target (Shapiro & Rieger, 1992; Zahedzadeh & Merolla, 2012). Kenney and Fridkin (2004), for example, suggest that negative messages delivered in a legitimate fashion and focusing on a relevant topic depress evaluations of opponents. In contrast, negative messages containing irrelevant information delivered in an overly strident manner depress

evaluations of both candidates involved in the campaign. Zahedzadeh & Merolla (2012) have examined the negative effects of attack ads on evaluations of candidates through lowering trust in candidates . While studies have looked at the effect of attack ads on turnout and candidate evaluations, they have not fully explored the mechanisms driving these relationships (Lau & Redlawsk, 2006). Craig & Rippere (2014) find little evidence that increased campaign negativity has contributed to the loss of public trust in government in recent decades. Referring to the "figure-ground hypothesis"[4], they posit that negative campaign ads are most effective among those who possess a high level of trust in their political leaders. With high trust being uncommon in U.S. politics today, hence negative appeals may play to a smaller audience than in the past. Their data indicate, however, that a well-conceived negative campaign ad can influence voter choice regardless of one's feelings about government.

Two recent experimental studies have examined negative campaigning in the laboratory: Zahedzadeh and Merolla (2012) and Craig and Rippere (2014). Zahedzadeh and Merolla focus on the effect of negative advertisements on candidate evaluations, by looking carefully at political trust as one important mechanism through which negative advertisements operate. They use a laboratory experiment in which subjects take part in a hypothetical election and are randomly assigned to a control group or a negative advertising condition, and instead of only relying on attitudinal reports of trust in candidates, they generate a behavioral measure of trust by having some participants play the trust game with the sponsor of the attack and the other participants play with the

[4] The "figure-ground hypothesis" suggests that negative information is more likely than positive information to shape people's attitudes and behavior, partly because negativity "stands out" in a world where most people have positive expectations of others (Lau 1985; Sears 1983).

target of the attack. They explore how the negative advertisement affects both measures of trust and how these in turn influence candidate evaluations. Craig and Rippere on the other hand, use a controlled experiment to measure the effects of negative political ads on voters with varying levels of trust. Thus their concern is not with political (mis)trust as a dependent variable, but rather as a possible moderator, that is, one factor among many that could make negative campaign ads either more or less effective.

This chapter tries to add another dimension to the above literature. It goes one step further by examining the wider consequences of negative campaigning on the whole society. Although it is important to understand the effect of negative campaigning on trust in candidates and interactions with politicians, it is even more crucial to understand how this negative environment can impact on societal interactions.

5.3 Theoretical Argument

The central argument of this chapter is that trust among individuals (interpersonal trust) can be affected by the campaign environment citizens are living in. Specifically, I argue that negative campaigning causes a reduction in the level of interpersonal trust in the society. This argument is based on social psychology research which established that the mental representation of a phenomenon can have an effect on behaviour outside the context of that phenomenon (Evans, 2008; Higgins, 1996; Strack & Deutsch, 2004). An important driver of these behavioural effects is the limited cognitive abilities of humans which prevent them from accessing the most relevant mental representations required for a decision. This implies that mental representations that have been recently or chronically accessed have an effect on behaviour even if they are not directly relevant. This effect

can be thought of as a spillover effect of the mental representation (Al-Ubaydli et al., 2013).

According to economic reasoning, however, beliefs about another person's trustworthiness for instance are formed via one rational process which encounters only relevant information. Specifically, researchers who study trust relations focus on the role of both *preferences* (which are assumed to be exogenous and stable over time, and thus represented by fixed utility functions in economic models, (Loewenstein *et al.*, 2008)) and *beliefs* about how others are expected to behave in a given situation (assumed to be formed according to equilibrium conditions and are subject to rational updating if possible). Social psychological reasoning, on the other hand, suggests two systems to be accountable for belief formation, thus influencing one's trust judgments and decisions; the ''rational'' system and the impulsive system.

These dual-process theories have assumed a noticeable role in human judgment, decision-making, and behaviour (Evans, 2008). In addition to the rational, rule-based way of information processing, these theories propose another associative, experiential way. Consequently, two systems (a reflective and an impulsive system) are assumed to be operating simultaneously and influencing each other during the formation of social behaviour (Strack & Deutsch, 2004; 2005). The *reflective system* requires extensive cognitive resources, and integrates and weighs information on outcome-values and probabilities to reach optimal decisions. The *impulsive system*, on the contrary, requires little cognitive resources but can have unexpected effects on reflective decision making, through the heightened accessibility of information, that has been activated in the associative structures of the impulsive system (Strack & Deutsch, 2004). In fact, there is

a rich body of classic social cognition findings which demonstrates that people base their judgments and decisions on information accessible at the specific moment in time where this judgment or decision is to be made (Higgins, 1996).

An interesting fact is that the activated information does not necessarily have to be inherently linked to the judgment to have an impact. Indeed, priming experiments demonstrate that judgment-irrelevant knowledge that is rendered accessible in preceding priming tasks critically shapes how people, in their reflective systems, see, interpret and judge others' behaviours.

With respect to one's trusting behaviour towards others, the principle of dual processes should also hold. As every other judgment and decision, judgments about another person's trustworthiness should occur in the reflective system, which may be influenced by the heightened accessibility of information in the impulsive system. Indeed, this assumption is supported by a recent body of experimental literature (Mayer & Mussweiler, 2011; Schul *et al.*, 2008; Todorov *et al.*, 2008). Thus, according to social psychological theorizing and research, reflective trust judgments and trust decisions should clearly be influenced by contents that have been activated in a previous, unrelated task, and still exert their influence in the associative structures of the impulsive system (Posten et al., 2013).

This chapter aims at putting these different assumptions about trust belief formation to a test. Specifically, I activate, through a priming lab experiment, different contents (the videos on negative and positive news coverage of a hypothetical election) in the impulsive system to demonstrate its influence on reflective reasoning in the domain

of ‘‘rational’’ trust decisions in an economic trust game. If judgments and decisions were solely reflective and no influence of the impulsive system existed, then activation of these different contents in the associative structures of the impulsive system should not exert any effect on the trust decision. If, however, some influence of the impulsive system existed, activation of these different contexts should have an impact on the trust decision of individuals.

The priming used to test my argument is news coverage of a hypothetical election to decide the president of the university's student union. In the Positive Campaign treatment, subjects watch a video where candidates are described as behaving positively in the campaign. In the Negative-Personality Campaign treatment, subjects watch a video where candidates are described as behaving negatively in personality claims in the campaign. And in the Negative-Policy Campaign treatment, subjects watch a video where candidates are described as behaving negatively in policy claims in the campaign.

A secondary argument of this chapter is that negative (positive) campaigning can have a negative (positive) impact on voters' intensions to vote. This argument is based on the literature on campaigning, especially the first strand, which focuses on the effects of negative ads on turnout, citizen participation and democratic processes (Ansolabehere & Iyengar, 1996; Ansolabehere *et al.*, 1994). My argument could also be viewed as a byproduct of the findings of the second strand in the literature on campaigning which is concerned with the effect of negative campaign ads on candidate evaluations; both the sponsor and the target (Shapiro & Rieger, 1992; Zahedzadeh & Merolla, 2012).

The following is a summary of my predictions:

Prediction 1: *A negative campaigning environment that targets the personality of the candidates can have negative effects on the level of trust among people (interpersonal trust).*

Prediction 2: *Different campaign environments can have different effects on the level of trust in the political system, measured by voters' intensions to vote in the upcoming election as follows: (i) Positive campaigns increase voters' intensions to vote, (ii) Negative- campaigns (both with respect to personality and policy) decrease voters' intensions to vote.*

5.4 Experimental Design

The experiment was conducted in November 2014 with a sample of undergraduate students from Cairo University. The time period is important to the context of the experiment with parliamentary elections being scheduled to take place in February 2015, thus the preparations of election campaigns by candidates.

Because of the tension in the country at that time, the use of political wordings, like parliamentary elections, was avoided. Instead a context of a student union election with two candidates "A" and "B" running for President of the University's Student Union was used.

To be able to examine the impact of different campaign strategies, and not just negative campaigning, on my dependent variable (interpersonal trust), I have created three different treatments for the three possible campaign strategies; *negative personality*,

negative policy, and *positive*. Subjects in the experiment were then randomly assigned to a control group, a negative campaigning condition on candidates' personality, a negative campaigning condition on candidates' policies, or a positive campaigning condition. They were first asked to answer a set of survey questions, and then watched two videos on a news report, whose content depended on the treatment assigned. After that subjects were asked to play the trust game- to be elaborated on below- and then were asked to answer another battery of survey questions. I seek to test if trust among subjects who faced the negative campaigning condition was lower than among subjects who did not face that negative condition. Below, I report on more details of the experimental design.

All decisions in the experiment were made privately by subjects over a closed computer network, in separated booths by subject id number. No individual subject's choices were revealed to other subjects or recorded by name. Subjects' payments were made after the experiment was completed in a private place.[5] The experiment was conducted fully in Arabic and the sessions' instructor was not currently engaged in any teaching at the university.

5.4.1 Sample and Procedures

Undergraduate students at Cairo University were recruited by both an ad fixed in the university's premises and email advertisements. They were promised a monetary reward that depends on their play in a decision making task. Two hundred and twenty four individuals agreed to participate in the study.

[5] The exchange rate between an Egyptian pound and the U.S. dollar at this time was 1 USD = 7.15 EGP.

Subjects first filled out a consent form. After signing the form, participants were informed that they would remain anonymous during the experiment (i.e., identified by code numbers), would receive the instructions for each part separately, and would be paid at the end of the experiment in a private place. The study was programmed in Z-tree.

Subjects were randomly assigned to either the three treatments or the control condition. In Part I of the experiment, they were asked to complete a questionnaire collecting information on demographic characteristics as well as questions that measure their trust both in others and in politicians. In Part II, they were then shown two videos; those in the negative treatments groups watched a news report on an attack ad between the two candidates running for president of the University's student union, and those in the positive treatment group watched a news report on the positive campaign pledges of the two candidates. Following exposure to the treatment (or not for the control group), all participants were asked, in part III, if they intend to vote in the election covered by the videos if it was to take place tomorrow[6]. In part IV, subjects were asked to play the trust game.

After the trust game, subjects were asked to complete a more comprehensive questionnaire including questions about trust. After finishing the survey, subjects were compensated in a secure place and the total earnings were on average $15. The whole experiment took between 45-55 minutes to complete, and was conducted in Arabic with the same individual reading the instructions in all sessions. None of the participants were

[6] The control group was asked the same question but with a slight change in the wording "If the student union election is to run tomorrow, will you vote in it?"

students in the experimenter's classes. All sessions were conducted in the Laboratory of the Faculty of Economics and Political Sciences at Cairo University.

5.4.2 Treatments

Two hundred and twenty four subjects completed the experiment. Subjects were randomly assigned to four different groups: Control Group (n=56), Negative-Personality Campaigning Group (n=56), Negative-Policy Campaigning Group (n=56), and Positive Campaigning Group (n=56). Table 5.1 below summarises my treatments.

Table 5.1: Summary of Treatments

Treatment Name	Video Content	Sessions	Groups	Total Subjects
Baseline	Boring	2	4	56
Negative Policies	Policy attack	2	4	56
Negative Personality	Personal attack	2	4	56
Positive	Positive campaign	2	4	56
Total		8	16	224

Everyone in the Negative-Personality and Negative-Policy Campaigning treatment group watched the negative ad before getting to play the trust game. Subjects in the Positive treatment watched a positive campaign ad before playing the trust game. And

subjects in the control group watched a news report on a neutral, non-political, boring topic before playing the trust game[7]. I will elaborate on the details of the trust game next.

5.4.3 Trust Game

Despite the fact that surveys, which directly ask subjects about their level of trust in others, have been the standard way to measuring trust in political science (Cook & Gronke, 2005), some economists and political scientists are cynical of attitudinal reports and advocate for behavioural measures. Hence, the trust game of Berg et al. (1995) has become the standard laboratory experiment in economics for measuring trust through measuring a senders' willingness to trust a receiver. This is done by endowing the trustor a given sum of money and asking him/her to start the first move, where he/she must decide how much, if any, to send to a trustee. Any money sent to the trustee is then tripled before reaching the trustee who is then asked to make the second move, deciding how much money to return to the trustor[8].

However, with one of the standard assumptions in economics being that individuals are motivated by only their material self-interest, solving the above trust game while assuming selfish preferences and rational choice theory, results in the only sub-game perfect Nash equilibrium (SPNE) being for the trustor to send no money to the trustee. This is because the trustor uses backward induction and thus can infer that the trustee will never return any money. Consequently, any money sent by the trustor is commonly used to measure his trust that the trustee will return his money, and money

[7] For a review of the videos' scripts, see appendix G.

[8] Note that player A's move is a reflection of "trust" and player B's move is a reflection of "trustworthiness" or reciprocity.

returned by the trustee is used to measure his trustworthiness. Since then, experimental economists have used economic games, such as Berg et al.'s trust game, to show that people's behaviour might contradict the self-interest theory but is consistent with theories of fairness (Fehr & Schmidt, 2004).

I wanted to generate a similar type of behavioral measure of trust among individuals within my experiment. Specifically, I wanted to see subjects' decisions in a trust game with real monetary stakes following the priming they were exposed to. Knowing that this was a one-shot game, subjects knew that they needed to decide wisely: Can the subject they were to play the game with be trusted? In my experimental setting, the first mover got endowed with the equivalent of $10 and was told that any transferred amount will be doubled[9]. First movers had the option of choosing a costly trusting action by sending money to the second mover. If the first mover transferred some money, the total amount available for distribution between the two players would increase but, initially, the second mover will reap the whole increase. Would the second mover honour the first mover's trust and share the monetary increase generated by the first mover's money transfer? If the first mover sends money to the trustee (second mover) who then shares the proceeds of the transfer, both players will end up with a higher payoff. The first mover is thus trapped in a dilemma: if he trusts and the second mover shares, the first mover increases his payoff. However, there is also the risk that the second mover will misuse this trust in which case the first mover is worse off than if he had not trusted in the first place and, the second mover will be the one who has an unfair payoff advantage relative to the first mover.

[9] The doubling plays the part of a return on investment in the game.

Hence, those first movers who have trust in second movers, and thus were encouraged to transfer money to them, must have exerted an effort to overcome their aversion against this risk. This allows me to address the question of whether the negative personality attack in the negative campaign treatment has an impact on the trusting behaviour toward other subjects with whom the subject plays the trust game.

The amount transferred to second movers in the trust game serves as my dependent variable. I expect that subjects exposed to the negative news report will send less to their partners, compared to individuals in the control group who were not exposed to the negative news report (*Prediction1*). I also expect that subjects' intensions to vote in the upcoming elections will be negatively (positively) affected by exposure to the negative (positive) news report (*Prediction2*).

5.4.4 Control Measures

Observational studies have pointed to heterogeneity in generalised trust within a given population. Trust experiments have thus examined the relationship between an individual's personal characteristics, like gender and ethnicity, and his/her behaviour in the games (Wilson & Eckel, 2011). Many studies have examined religion and trust (Anderson *et al.*, 2010; Danielson & Holm; Johansson-Stenman *et al.*, 2009). Other studies found experimental evidence that age is related to trust and reciprocity. Croson and Gneezy (2009) find that out of twenty studies on gender differences, nine studies show that men trust more than women.

Consequently, my approach was, in addition to the use of random assignment as the principal method to control for individual specific variation, I aimed at controlling for

various individual differences, which I suspected might affect subjects' behaviour in the trust game. Specifically, subjects were surveyed at the beginning of the experiment as to their age, gender, and religion.

5.5 Experimental Results

Before beginning the discussion of my experimental findings, it is useful to get a sense of the data. Table 5.2 gives a summary of subjects' demographics. A quick look at this table shows that the majority of my sample was Muslim and female undergraduate students. Consequently, and to avoid any possible effects on a subject's behaviour in the trust game, I will be controlling for both religion and gender in my analysis.

Table 5.2: Subjects' Demographics

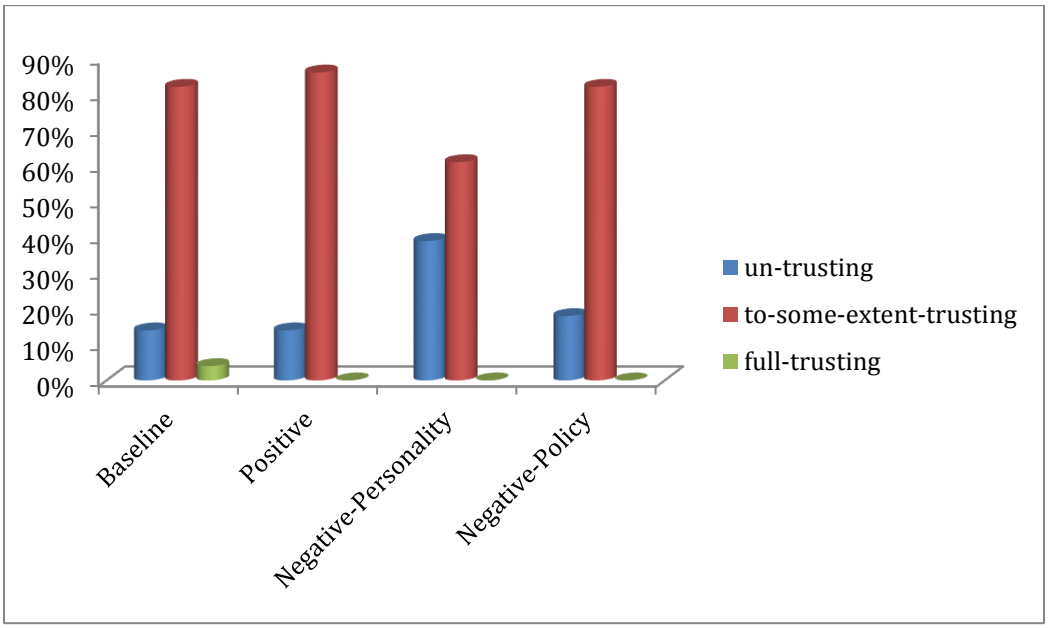
	Baseline	Negative Personality	Negative Policy	Positive
Number of Subjects	56	56	56	56
Gender (Female)	62%	57%	89%	53%
Age bracket (20-22)	85%	96%	100%	96%
Religion (Muslim)	91%	100%	96%	91%

I now begin my discussion of the results of the experiment with a comparison of my four treatments; *Baseline*, *Negative-Personality*, *Negative-Policy*, and *Positive.* As discussed above, I measure how subjects responded to the different types of campaigning priming by two variables; the amount of money sent by the first mover in the trust game (which I take as a proxy for the level of interpersonal trust), and voters' intensions to vote (which is measured by the dummy variable "Yes" that takes a value 1 (0) if a subject's response is 'yes' ('no') to the question "If the student union election that was covered by

the news report to be held tomorrow, will you vote in it?". This measure is used as a proxy for the level of trust in the political system).

I first classify subjects who played the role of first movers in the trust game into "full-trusting", "to-some-extent-trusting", and "un-trusting" categories. In the aggregate, I find that 1% of first movers are "full-trusting" (sent L.E 70), 21% of first movers are "un-trusting" (sent L.E 0), and 78% of first movers are "to-some-extent-trusting" (sent other amounts). I then test whether the proportion of first movers falling into each trust classification varied based on the prevailing campaigning condition. Proportions in each trust category, sorted by treatment, are shown in Figure 5.1. To accommodate the extremely small number of participants who are full trusting, I use a Fisher's exact test of proportions. This test reveals that (i) Negative-Personality campaigning has a significant effect on participants' trust tendencies (Fisher's exact test $p = .033$), (ii) Negative-Policy campaigning has a significant effect on participants' trust tendencies (Fisher's exact test $p = .021$), and (iii) Positive campaigning has no significant effect on participants' trust tendencies (Fisher's exact test $p = .241$).

Figure 5.1: Trust Proportions (by Treatment)

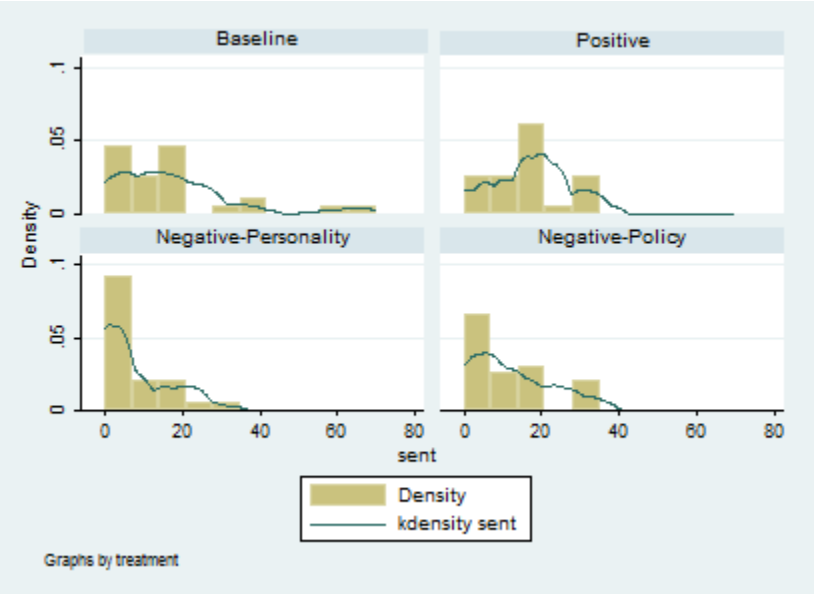


I now turn to examining my measure of interpersonal trust; the amount of money sent by first movers in the trust game. I find that the mean amount sent is L.E 17.2 in the *Baseline* treatment (sd=16.9, N=28, 95% confidence interval is (10.6, 23.8)), L.E 7 (sd=8.9, N=28, 95% confidence interval is (3.6, 10.5)) in the *Negative Personality* treatment, L.E 11 in the *Negative Policy* treatment (sd=10.3, N=28, 95% confidence interval is (6.9, 15.0)), and L.E 16.7 in the *Positive* treatment (sd=10.2, N=28, 95% confidence interval is (12.8, 20.8)), as shown in figure 5.2. A mean-comparison test, t-test[10], is used and the null hypothesis of equal means in the Baseline and (i) Negative Personality is rejected at the 1 percent level (p=0.0034), (ii) Negative Policy is rejected at the 10 percent level (p=0.0518), and (iii) Positive treatment is not rejected. I also used the non-parametric test on equality of distributions, ranksum, and the null hypothesis of equal distributions between the Baseline and (i) Negative Personality treatment is rejected at

[10] This is independent samples t-test which compares the difference in the means from the two treatments to a given value (usually 0). In other words, it tests whether the difference in the means is 0.

the 1 percent level (z = 2.7, p=0.0064), (ii) Negative Policy treatment is not rejected (z = 1.4, p=0.17), and (iii) Positive treatment is not rejected (z = -0.6, p=0.53).

Figure 5.2: Mean Amount of Money Sent by First Movers in all treatments



I then analysed, continuously, the exact amounts sent by the first movers in the trust game using a tobit regression model. Results are in Table 5.3. Model 1 provides results with just three dummies for the three different treatments incorporated in the regression, while model 2 presents results with demographic information incorporated as well to control for individual differences.

Without any demographic controls, it is clear that negative campaigning has a significant negative effect on interpersonal trust, when the content of the attack is on a personality ground. The amount sent by first movers, exposed to the negative news report targeting candidates' personality, in the trust game is 13% less (p=0.005). Negative campaigning with respect to candidates' personality continues to decrease money sent by

first movers when including the demographic measures as controls, (coefficient=-13.11; p=0.008).

As for the effect on interpersonal trust of negative campaign ads targeting candidates' policies, the sign of the coefficient is negative, i.e. on the right direction, but insignificant whether demographic characteristics were controlled for or not. Regarding the effect of positive campaign ads, one can see an insignificant effect. Concerning the other control variables, I find an insignificant effect of both gender and religion on the amount sent by first movers. So, despite having a strongly women and Muslim focused sample, there are neither gender nor religion differences.

Table 5.3: Effect of Different Campaign Dynamics on Amount Sent by First Movers

Sent	(1)	(3)
Negative-Personality (D)	-13.23***	-13.11***
	(0.005)	(0.008)
Negative-Policy (D)	-6.72	-6.32
	(0.117)	(0.141)
Positive (D)	-0.44	-0.62
	(0.916)	(0.884)
Most of Time Trust Others (D)		-1.09
		(0.684)
Gender (Female) (D)		-1.12
		(0.750)
Religion (Muslim) (D)		-1.69
		(0.631)
Intercept	16.19***	18.78***
	(0.000)	(0.000)
Observations	112	112
Pseudo R^2	0.0181	0.0187
Log Likelihood	-381.0	-380.8

The above results show that what affects the level of interpersonal trust in a society the most is campaign ads that have a tough negative tone on candidates'

personalities due to its impact on the public mood. Negative ads that target candidates' policy pledges, on the other hand, do not have a significant effect on interpersonal trust, as expected, but should have an impact on the level of trust in the political system through lower intensions to vote as I turn to examine next.

I now turn to my second theoretical prediction; the effect of different campaign environments on voters' intensions to vote. In this regard, I have used a probit regression analysis. The dependent variable is the dummy variable 'Yes' that captures a subject's answer (yes or no) to the following question: "If the student union elections covered by the video is to be held tomorrow, will you vote in it?" Table 5.4 presents the results for the three different campaign environments; *Negative-Personality, Negative-Policy* and *Positive*.

In model 1, I included just dummies for the three treatments; *Negative-Personality*, *Negative-Policy* and *Positive*. In model 2, I have added additional regressors that control for subject idiosyncratic characteristics such as gender, religion…etc., and questionnaire answers on one's trust of others.

Indeed probit regression supports my prediction that the campaign environment has an impact on voters' intensions to vote: Without any demographic or questionnaire controls, (i) the estimated effect of a dummy variable that takes the value of 1 when the negative-personality treatment is in place decreases the likelihood of a subject voting in an upcoming election by 40% (robust standard error = 0.089, p-value=0.000), (ii) the estimated effect of a dummy variable that takes the value of 1 when the negative-policy treatment is in place decreases the likelihood of a subject voting in an upcoming election

by 31% (robust standard error = 0.093, p-value=0.001), and (iii) the estimated effect of a dummy variable that takes the value of 1 when the positive treatment is in place increases the likelihood of a subject voting in an upcoming election by 18% (robust standard error = 0.092, p-value=0.079).

When including both demographic measures and questionnaire answers as controls, I find that Negative campaigning with respect to candidates' personality continues to decrease voters' intensions to vote (-40 percent, p=0.000), Negative campaigning with respect to candidates' policy also continues to decrease voters' intensions to vote (-32.9 percent, p=0.001), and Positive campaigning continues to increase voters' intensions to vote (17.9 percent, p=0.075).

Table 5.4: Effect of Different Campaign Dynamics on Voters' Intentions to Vote

Dyes	(1)	(2)
Negative-Personality (D)	-0.397***	-0.401***
	(0.000)	(0.000)
Negative-Policy (D)	-0.314***	-0.329***
	(0.001)	(0.001)
Positive (D)	0.176*	0.179*
	(0.079)	(0.075)
Most of Time Trust Others (D)		0.057
		(0.447)
Gender (Female) (D)		0.054
		(0.480)
Religion (Muslim) (D)		0.003
		(0.987)
Observations	224	224
Pseudo R^2	0.156	0.159
Log Likelihood	-125.13	-124.59

The above experimental evidence points to the importance of the campaign environment in which voters live in on the level of interpersonal trust in the society.

Specifically, a campaign environment that is dominated by negative ads targeting candidates' personal traits decreases significantly the level of interpersonal trust among citizens. My findings also show the importance of all campaign strategies (*positive* strategies stressing candidates' campaign pledges, *negative* strategies that attack the personality of the opponent, or *negative* strategies that attack the policies of the opponent) on voters' intensions to vote.

5.6 Concluding Remarks

Using laboratory experiments, I find evidence that priming different campaign environments (Positive campaign ads targeting campaign pledges of candidates, Negative campaign ads attacking the personality of the opponent, or *negative* campaign ads attacking the policies of the opponent) has an effect on people's judgment of the trustworthiness of anonymous strangers and thus on trusting decisions. Specifically, I found a significant reduction in the amount of money sent by first movers in the trust game (-13 percent, p=0.008) for those subjects who were exposed to a news coverage of a hypothetical election between candidates 'A' and 'B' whose content was a negative attack by each of the two candidates on the personality of the other.

In addition to finding a significant effect on the level of interpersonal trust, I also find significant effects on citizens' intensions to vote in upcoming elections. Specifically, I find that Positive campaigning, where the campaign ads are stressing the campaign pledges of each candidate, increases voters' intensions to vote by 18 percent (p=0.075), Negative campaigning with respect to personality, where the contents of the campaign

ads are mainly attacks on the personality of each candidate's opponent, decreases voters' intensions to vote by 40 percent (p=0.000), and Negative campaigning with respect to policies, where the contents of the campaign ads are mainly attacks on the policies of each candidate's opponent, decreases voters' intensions to vote by 33 percent (p=0.001).

If negative campaigning can affect negatively the level of interpersonal trust, then public policy initiatives that aim at enhancing social capital and the level of trust among citizens should address this issue. For instance, actions by the government can address the tone of campaign ads, encourage substantive dialogue between candidates, etc.

It should be noted however that the relationship between different campaign strategies and the level of interpersonal trust has been examined by this experiment in just one culture; namely the Arab culture following the Arab Spring Uprisings. There is thus more scope for future research that examines the same relationship in different cultures, with this framework serving as a platform for cross-cultural comparisons.

Annexes

Appendix A

Chapter 2: Equilibrium Analysis

PROOF of the **Main Result**:

Below, we provide equilibrium analysis separately for the two games. Part 1 and 2 of the Main result follow from part 1 and 2, respectively of Propositions 1 and 2 below. Part 3 of the main result is a straightforward implication of statements (*) and (A.1).

Q.E.D.

Let *w* and *x* denote the earned and the claimed income by an individual. Let the penalty function $f(.)$ defined on underreported income, $(w - x \in [0, w])$, be an increasing and convex function and $f(0) = 0, f'(0) = 0$. Let the valuation of the C-good be identical for citizens and the official whereas the valuation of the G-good be asymmetric: it is valued more than the C-good by the official but less by the citizens. This is captured by the following order of the marginal per capita return, β of the public goods G and C across players,

(*) $$\min\{1, \beta_o^G\} > \beta_o^C = \beta_c^C > \beta_c^G \geq 1/(n-1)$$

where n is the number of players, player type in subscripts and public good type in superscripts. The lower bound 1/(n-1) is a sufficient condition for funding of each public

good to be socially efficient whereas the upper bound $\min\{1, \beta_o^G\}$ provides incentives for free riding. As we are mainly interested in cases for which the corruption is costly to the citizens as a population we will assume that *n* is large enough to satisfy,

(**) $$n > (1 - \beta_c^C)/(\beta_c^C - \beta_c^G)$$

We use R to denote the total number of rounds the game is played, i.e., the full term of the official in the office. Assume selfish preferences and risk-neutrality.

Proposition 1 (No-Recall Game)

1. The outcomes of the SPE are: under provision of the G-good, the only public good being funded.
2. There exist Nash equilibria that are Pareto improvement of the SPE. The outcomes of one such equilibria are: C-good being funded during the first r* rounds and G-good being funded during the remaining rounds, R-r*, for some r*. The number of rounds, r* during which the C-good is funded increases with the number of citizens using trigger strategies to punish corruption.

PROOF. First note that if public good *j* (*j* from (G, C)) is funded then it is optimal for player *i* to report income, x_i from (0, *w*) given by

$$x_i = x_i^*, if\ \beta_i^j < 1$$
$$= w, if\ \beta_i^j \geq 1 \qquad \text{(A.1)}$$

where x_i^* solves $f'(w - x_i^*) = \tau(1 - \beta_i^j)(1/p_a - 1)$, and it is 0 if at x=w the left hand side of the last equation is smaller than the right hand side expression, i.e., $f'(w) < \tau(1 - \beta_i^j)(1/p_a - 1)$.

Note also that (A.1) and statement (*) imply that $f'(w - x_c^*) \geq f'(w - x_o^*)$ and by convexity of the penalty function *f(.)* we get

$$x_c^* \leq x_o^* \tag{A.2}$$

for a public good *j*.

Next, let T denote the total tax revenue. At the end of the stage game, it follows from statement (*) that funding the G-good is optimal for the official as :

$$\pi_o(x_i, x_{-i}, 1) \quad - \pi_o(x_i, x_{-i}, 0) = (\beta_o^G - \beta_o^C)T \geq 0$$

Given that the G-good is funded, player *i* declares income, x^* that maximizes his expected payoff

$$\max_{x \in [0,w]} E\big(\pi_i(x_i, x_{-i}, 1)\big) = w - (1 - p_a)\tau x(1 - \beta_i^G) - p_a[f(w - x) + \tau w(1 - \beta_i^G)] + \beta_i^G T_{-i}$$

where the second and the third terms correspond to *i*'s payoff in two possible states of audition. As the penalty function, *f(.)* is convex and increasing, the optimal claimed income, x^* is determined by f.o.c., hence the specifications on the optimal x_i as stated above follow.

Part 1. The SPE Nash equilibrium of the stage game is a SPE of the R-round game. Thus, G-good is funded in every round. Under provision of the G-good in the SPE follows from the observation that under full compliance, an amount of $T^e = \tau nw$ goes to fund the G-good which is a Pareto improvement. Indeed, the difference between T^e and the expected total tax revenue in the SPE is

$$T^e - T^* = \tau nw - \tau \sum_{j=1..n}\left[(1-p_a)x_j^{*G} + p_a w\right] = (1-p_a)\tau \sum_{j=1..n}(w - x_j^{*G}) \quad \text{(A.3)}$$

and the payoff difference for any player *i* is positive,

$$\begin{aligned}\pi_i(G|T^e) - \pi_i(G|T^*) &= \beta_i^G(T^e - T^*) + p_a f\left(w - x_i^{*G}\right) - (1-p_a)\tau\left(w - x_i^{*G}\right)\\ &= \beta_i^G(1-p_a)\tau \sum_{j=1..n}\left(w - x_j^{*G}\right) + p_a f\left(w - x_i^{*G}\right) - (1-p_a)\tau\left(w - x_i^{*G}\right)\\ &\geq (1-p_a)\tau\left(\frac{1}{n-1}\sum_{j=1..n}\left(w - x_j^{*G}\right) - \left(w - x_i^{*G}\right)\right) + p_a f\left(w - x_i^{*G}\right)\\ &\geq \frac{(1-p_a)\tau}{n-1}\left(w - x_{-i}^{*G}\right) + p_a f\left(w - x_i^{*G}\right)\end{aligned}$$

where the second equality follows from (A.3), the first weak inequality is implied by statement (*) whereas the second inequality follows from (A.2), the symmetry of citizen's optimal choices and $x_i^* \leq w$.

Part 2. Consider the following profile of strategies: the official funds the C-good (p^G=0) in the first r* rounds and the G-good in the remaining R-r* rounds. If no defection occurs then each player *i* claims *w* in rounds 1 to r* and x_i^G in the remaining R-r* rounds. Any

defection at any round before r*+1 triggers funding of the G-good as of that round and claims of 0 income as of the following round until the end of the game. No deviation can be profitable after round r* as all players are playing Nash. The most tempting deviating strategy for the official is to defect by funding the G-good (p^G=1) and declaring his G-optimal level of income instead of *w* as of round r* (instead of r*+1): The official's round payoff increases by

$$\Delta\pi_o^{NR} = \pi_o(x_o^G, w, 1) - \pi_o(w, w, 0)$$

$$= \begin{cases} (\beta_o^G - \beta_o^C)T^w + \tau(1-p_a)(1-\beta_o^G)(w - x_o^G) - p_a f(w - x_o^G), & if\ \beta_o^G < 1, \\ (\beta_o^G - \beta_o^C)n\tau w, & if\ \beta_o^G \geq 1. \end{cases}$$

The total payoff in the remaining R-r* rounds decreases by

$$\Delta\pi_o^{R-r^*} = (R - r^*)[\pi_o(x_o^G, x_c^G, 1) - \pi_o(x_o^G, 0, 1)]$$

$$= (R - r^*)\beta_o^G(1-p_a)\tau(n-1)x_c^G$$

Thus the official is better off not deviating at r*, i.e. $\Delta\pi_o^{R-r^*} > \Delta\pi_o^{NR}$ if R-r* is the smallest integer larger than the ratio of round r* gains and average future round losses; let δ^{NR} denote this ratio,

$$\delta^{NR} = \frac{\Delta\pi_o^{NR}}{\beta_o^G(1-p_a)\tau(n-1)x_c^G}$$

If *m* (instead of *n*-1) citizens use the punishing strategy (of claiming income 0 after a defection) then $\Delta\pi_o^{R-r^*} = (R - r^*)\beta_o^G(1-p_a)\tau m x_c^G$ whereas $\Delta\pi_o^{NR}$ is not affected.

Hence, the number of rounds of the C-good being funded (no corruption), r*, increases with the number of citizens engaging in retaliation.

About citizens, it can be verified that a citizen's defection at round *r** by claiming some other amount x instead of *w* changes the round payoff by

$$\Delta\pi_c^{NR} = \pi_c(w, w, 0) - [p_a\pi_c(x, w, 1) + (1 - p_a)\pi_c 0]$$

$$= p_a f(w - x) + p_a(\beta_c^C - \beta_c^G)nw\tau + (1 - p_a)(\beta_c^C - 1)(w - x)\tau$$

$$> p_a w\tau[(\beta_c^C - \beta_c^G)n - (\frac{1}{p_a} - 1)(1 - \beta_c^C)\left(1 - \frac{x}{w}\right)]$$

$$> p_a w\tau[(\beta_c^C - \beta_c^G)n - (1 - \beta_c^C)]$$

where the first inequality follows from the penalty function being positive whereas the second one follows form $(1 - p_a)(1 - x_c^G/w)<1$. Hence, for *n* large enough (**) one has $\Delta\pi_c^{NR} > 0$, so the citizen's round payoff decreases if he does not claim *w*. In addition the remaining rounds payoffs cannot increase either as with probability p_a defection is detected and claims of all players (but our citizen's claim) become 0 in response to defection, i.e., the change in future payoffs is

$$\Delta\pi_c^{R-r^*} = -(R - r^*)p_a\beta_c^G(1 - p_a)\tau\left((n - 2)x_c^G + x_o^G\right) < 0.$$

Q.E.D.

Proposition 2: Recall Game.

1. The outcomes of the SPE are: under provision of the G-good, the only public good being funded and smaller payoff inequality than in the NoR game.

2. There exist Nash equilibria that are Pareto improvement of the SPE. The outcomes of such equilibria are of the following two types:
    a. Official is always recalled: C-good is funded during the first ra* rounds and G-good is funded during the remaining rounds, R-ra*, for some ra* *not larger than* r*.
    b. Official is not recalled if he funds the C-good: C-good is funded during the first rb* rounds and G-good is funded during the remaining rounds, R-rb*, for some rb* *larger than* both ra* and r*.

PROOF. Note that adding "always recall the official" to the profile of strategies of the NR-game SPE strategies remains SPE which concludes the proof of part 1. As the official is changing across rounds, players are taking rounds in enjoying the high payoff from the G-good, hence the payoff inequality is smaller.

About part 2a, consider the following extended profile of strategies reported in part 2 of Proposition 1: the official funds the C-good in the first ra* rounds and the G-good in the remaining R-ra* rounds. If no defection occurs then each player i claims w and votes against a recall in rounds 1 to ra* whereas in the remaining R-ra* rounds the declared income is x_i^G and the vote is in favor of a recall. Any defection at any round before ra*+1 triggers claiming earned income is 0, funding of the G-good and voting in favor of a recall until the end of the game. No deviation pays off after ra* as all players are playing Nash. As in the proof of part 2 of the NR game, a citizen's deviation at round ra* reduces the round payoff as well as future payoffs. Suppose that the official defects by funding

the G-good and declaring x_i^G as of round ra* (instead of ra*+1). The official's round gain is the same as in the NR game,

$$\Delta\pi_o^R = \pi_o(x_o^G, w, 1) - \pi_o(w, w, 0) = \Delta\pi_o^{NR}$$

Letting γ denote the probability of serving as an official in the remaining rounds, the total payoff in the remaining R-ra* rounds decreases by

$$\Delta\pi_o^{R-ra^*} = (R - ra^*)[\gamma(\pi_o(x_o^G, x_c^G, 1) - \pi_o(x_o^G, 0,1)) + (1-\gamma)(\pi_c(x_c^G, x_o^G, 1) - \pi_c 1]$$

The expression within the square brackets is smaller than the corresponding one in NR game if when the G-good is funded, others claiming 0 instead of their G-optimal level of income results in a citizen's loss smaller than the official's loss; formally is

$$\pi_c(x_c^G, x_o^G, 1) - \pi_c(x_c^G, 0,1) < \pi_o(x_o^G, x_c^G, 1) - \pi_o(x_o^G, 0,1)$$

which is equivalent with

$$\beta_c^G\left((n-2)x_c^G + x_o^G\right) < \beta_o^G(n-1)x_c^G$$

The last inequality for *n* big enough as the following inequality holds[1]

$$\frac{n-2}{n-1} + \frac{x_o^G}{(n-1)x_c^G} < \frac{\beta_o^G}{\beta_c^G}$$

Hence $\delta^{NR} > \delta^{Ra}$ from which it follows that ra* cannot be larger than r*. Therefore, just as in the case of SPE, the recall option cannot hinder corruption in this equilibrium either.

[1] Recall that optimal claims do not depend on *n*, so the left hand side converges to 1 as *n* goes to infinity whereas the right hand side is strictly larger than 1 as the G-good is more valuable to the official than the citizen.

Part 2b. Consider the profile of strategies as in part 2a with only one difference: in the first rb* rounds "vote in favor of recall only if the official funds the G-good", in rounds rb*+1 to R defection "vote against recall". No citizen is better off by deviating in rounds earlier than rb*. If a citizen deviates and "votes in favor of a recall" after round rb* then his vote has no affect as the official leaves the office only if the majority (or the supermajority) votes for it. On the other hand, official's defection increases the round payoff by the same amount as in the NR game. That triggers claims of 0 income, the official is recalled and remains out of the office until the end of the game. The ratio between the round gain and the average future rounds loss is smaller than in the NR game as

$$\delta^{Rb} = \frac{\pi_o(x_o^G, w, 1) - \pi_o(w, w, 0)}{\pi_o(x_o^G, x_c^G, 1) - \pi_c(x_c^G, 0,1)} < \frac{\pi_o(x_o^G, w, 1) - \pi_o(w, w, 0)}{\pi_o(x_o^G, x_c^G, 1) - \pi_o(x_o^G, 0,1)} = \delta^{NR}$$

where the inequality follows from $\pi_c(x_c^G, 0,1) < \pi_o(x_o^G, 0,1)$. Thus, rb* cannot be smaller than r*.

Q.E.D.

Appendix B

Chapter 2&3: Subject Instructions for Recall Treatment (in English)

Welcome and thank you for participating in today's experiment.

I. Introduction

This is an experiment in the economics of group decision making. Your earnings will be determined by your own decisions and the decisions of others as described in the following instructions. **SO, IT IS IMPORTANT THAT YOU READ THESE INTRUCTIONS CAREFULLY.**

This experiment is structured so that only you know your earnings. All of the money that you earn will be paid to you privately in cash immediately at the end of today's experiment. Various research agencies have provided the funds for the conduct of this research study.

If you have any questions, RAISE YOUR HAND and an experimenter will come up to you to answer questions in private. Please feel free to ask as many questions as you like.

Time

This experiment will last around two hours.

Scenario

In this experiment, you will be a member of a group of 5 individuals. You will be randomly assigned to a group and will remain in the same group for the entire experimental session.

Every group has an official who is selected randomly from among your group members by the computer at the beginning (before period 1) and in the middle (before period 8) of the experiment in the absence of a recall "election". Thus, a selected official remains the official of the group for seven periods unless the majority of members vote for a recall election. In case of a recall election, another official is selected randomly from among the eligible members of the group. A member of the group is eligible if he/she has not been a subject of a recall election during the last three elections. There are 14 decision periods in this experiment.

Anonymity

You will not know the rest of your group members, neither will they know you.

II. Monetary payoff

You earn money in Experimental Pounds (EP) in each decision period. This amount will be displayed on your computer screen at the completion of the decision period. At the end of today's experiment, your total accumulated earnings in experimental pounds divided by the number of periods will be converted into Egyptian pounds at the below mentioned conversion rate. The more experimental pounds you earn, the more Egyptian pounds you will be paid.

1 Experimental Pound = 10 Egyptian Pounds

The following section explains how to earn money in each decision period.

III. Task and decision making process

In this experiment, you will go through the below mentioned sequence of events in each of 14 decision periods.

Event I

All subjects are given a simple task to find the spelling mistakes in a piece of text on the computer. You will be given 2 minutes to conduct the task. You can make corrections to the text by using your mouse to place your cursor in the correct area and make the correction. Use the mouse to move you to other parts of the text. You will earn 2 Experimental Pounds for each mistake that you correct accurately. There are a total of 10 errors. This income will be displayed on your screen at the completion of the task.

Event II

Your earned income is what you earn in Event I. You will make the choice of how much of this earned income to report using the sliding scale on your screen. There is an income tax at 25% that you need to pay on the income you report. This tax rate is the same for all individuals belonging to the same group. As you move the slide to determine how much income you will report, you can see the consequences of your choice in terms of your net income if you are audited or not.

You can choose to report none of it, part of it or all of it. Consequently your reported tax liability is equal to: 25%* Reported Income.

Event III

Once you choose the level of income you will report, a random audit will be performed. One subject out of five in the group will be chosen for audit so the likelihood of a subject being audited is 20%. If you are chosen for the random audit, your earned income will be disclosed to the official. If the audited individual's reported income in Event II is <u>less than</u> the earned income in Event I, then the individual pays, <u>in addition to the tax of</u> 25% of the *earned* income, a tax penalty that increases in the difference between the earned income and reported income as in the table that was handed out to you.

You pay a tax penalty only if you are audited and if your reported income is less than the earned income.

Event IV

Income taxes in this experiment will go into your group fund; they will be used to fund a public good that is valuable (in terms of experimental pounds) to you and your group members. Each experimental pound (EP) that goes in the public fund is tripled. Therefore,

Public fund = 3 * Income taxes collected from all the members in your group

(Note: Tax penalty is not added to the public fund)

There are two types of public goods available in this experiment, Type C and Type G. The choice of which good is made available to you and your group is made by the official who is a member of your group.

The benefits of Type C good are shared equally among all 5 members of the group, while the benefits of Type G good accrue 50% to the official with the remainder split among the other four group members.

Earnings if public project of Type C is funded

Public good earnings of:

- the official = Public fund / 5
- of each other member = Public fund / 5

Earnings if public project of Type G is funded

Public good earnings of:

- the official = Public fund / 2
- of each other member = Public fund / 8

For example, if

Income taxes collected by the government in your group = 20 EP

Public fund = 3*20 = 60 EP

Earnings from public good of Type C:

When this good is chosen, then all the group members earn equal amount and the money in public fund is equally divided between all the group members.

Public good earnings = 60 /5 = 12 EP

Earnings from public good of Type G:

When this good is chosen, then the official will earn more than the rest of the group members: Half of the total amount of money in public fund is given to the official; the remaining half of the public fund is equally divided among all four remaining group members.

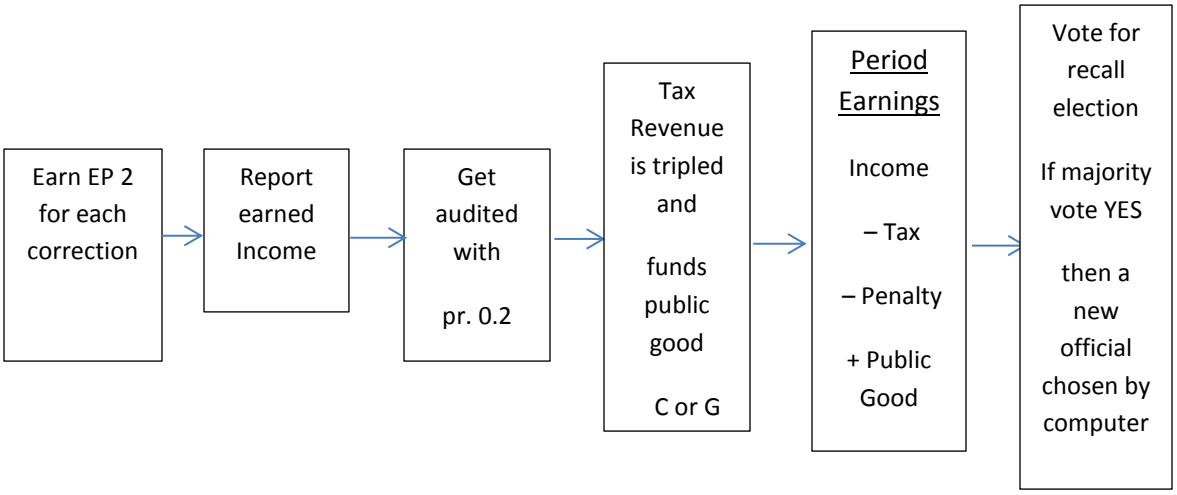
Public project earning of the official = 60/2 = 30 EP

Public project earnings of each other group members = 60/8 = 7.5 EP

Event V

Once the public good decision is made, you will see a screen that asks whether you would like a recall election or not. If the majority of the group chooses yes, then the computer will choose a new official.

The following diagram illustrates the sequence of events in every period



Section IV below shows your total earnings or payoff in each decision period resulting from Events I to IV explained above.

IV. Earnings in each decision period

Scenario I: If you are not audited

Total earnings = Earned Income – tax liability + public good earnings

(Note: As explained above, public good earnings depend on the type of public good provided to the group by the official)

Scenario II: If you are audited

Total earnings = Earned Income – tax liability – tax penalty + public good earnings

(Note: Tax penalty is equal to zero if your reported income is equal to your earned income)

Final earnings at the end of the experiment = (Total earnings in 14 rounds/14)*10

V. Questionnaire and payment

At the end of today's experiment, you will complete a brief on-line questionnaire, receive payment of your earnings, and then the experiment is over. Information about your decisions will be kept without identifying information so no one can link you as an individual to the decisions that you make.

Appendix C

Chapter 2&3: Penalty Structure

Unreported Income	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Tax Penalty if Audited	0.10	0.28	0.52	0.80	1.12	1.47	1.85	2.26	2.70	3.16	3.65	4.16	4.69	5.24	5.81	6.40	7.01	7.64	8.28	8.94

Appendix D

Chapter 2&3: Post-Experiment Questionnaire

Below are several questions relating to your demographic information, your views concerning some economic and political issues, and experience with tax reporting. These questions may be of a sensitive nature. Although your name will not be matched with your responses in any way and all information provided will be kept strictly confidential, you may be uncomfortable or unable to answer all questions. Please indicate if you prefer not to answer a particular question or if you would like to leave the study at any time. If you choose to answer the questions, please answer them honestly and to the best of your ability.

1. In what year were you born?

Year:_____

2. Are you?

Male

Female

3. What is your current grade point average?

_____

4. What is your field of study?

_____

5. What is your religious affiliation?

Muslim

Copt

Catholic

Protestant

Other

No Religion

Prefer Not to Answer

5. Are you currently working?

Yes, I have a full-time job

Yes, I have a part-time job

Yes, I am self-employed

No, I am still studying

No

Prefer Not to Answer

6. Have you ever had a paid job?

☐ Yes

☐ No

☐ Do not know

☐ Prefer not to answer

7. What is your year in university now?

Freshman

Sophomore

Junior

Senior

Graduate Student

I am not currently enrolled in university

Prefer Not to Answer

8. What is <u>your</u> current marital status?

Single

Engaged

Married

Separated

Divorced

Widowed

Prefer Not to Answer

9. I seek opportunities for doing things that I never did before

☐ Yes

☐ No

☐ Don’t know

☐ Prefer not to answer

10. I don’t worry about the consequences of what I do.

☐ Yes

☐ No

☐ Don’t know

☐ Prefer not to answer

11. I never get lucky breaks.

☐ Yes

☐ No

☐ Don’t know

☐ Prefer not to answer

12. I frequently get jittery and worry about things.

☐ Yes

☐ No

☐ Don’t know

☐ Prefer not to answer

13. I proceed with care in most endeavors.

☐ Yes

☐ No

☐ Don’t know

☐ Prefer not to answer

14. I tend to do dangerous things without adequate precautions.

☐ Yes

☐ No

☐ Don’t know

☐ Prefer not to answer

15. While at university, did you take part in social activities?

☐ Yes

☐ No

☐ Don’t know

☐ Prefer not to answer

16. If yes in answer 15, in which social activities did you take part?

……

17. Do you have friends?

☐ Yes

☐ No

☐ Don’t know

☐ Prefer not to answer

18. Do you share your secrets with some of them?

☐ Yes

☐ No

☐ Don't know

☐ Prefer not to answer

19. Would you say that most people can be trusted?

☐ Yes

☐ No

☐ Don't know

☐ Prefer not to answer

20. Do you think democracy, with multiple political parties and free elections, is the best system for governing Egypt?

☐ Agree

☐ Disagree

☐ Don't know

☐ Prefer not to answer

21. Do you think the following institutions are trustworthy?

	Agree	Disagree	Don't know	Prefer not to answer
Judiciary				
Parliament				
Government				

Religious leaders				
State media				
Private media				

22. Thinking now of the country as a whole, do you think compared with <u>five years ago</u>, standards of living have?

- ☐ Fallen a great deal
- ☐ Fallen a little
- ☐ Stayed the same
- ☐ Risen a little
- ☐ Risen a lot
- ☐ Don't know
- ☐ Prefer not to answer

23. Here is a list of existing problems in Egypt today. Tick the biggest problem and the second biggest problem:

	a. Biggest problem	b. Second biggest problem
Poor public goods and services		
Unemployment		
Poverty		
Corruption		
Security/crime		
Protests		
Wages and salaries		

24. What do you think about the following statement?

	Agree	Disagree	Don't know	Prefer not to answer
Free elections are the means to				

solving the above mentioned problems.				

25. Are you generally satisfied with the quality of public goods and services provided by the government?

☐ Yes

☐ No

☐ Don't know

☐ Prefer not to answer

26. What do you think about the following statements?

	Agree	Disagree	Don't know	Prefer not to answer
It is okay not to declare everything one earns to the tax authorities				
Most people try to avoid paying their fair share of tax				

27. Have you participated in an economics experiment previously?

☐ Yes

☐ No

☐ Don't know

☐ Prefer not to answer

28. Have you filed tax return before?

☐ Yes

☐ No

☐ Don't know

☐ Prefer not to answer

Appendix E

Chapter 4: Information Treatment

Subject Instructions

Introduction:

Welcome to the experiment. During the following experiment, we require your complete attention, and ask that you follow the instructions carefully. Please turn off your cell phones. Please raise your hands if you have any questions. The experimenter will come to you privately and answer your questions.

As you entered the experimental laboratory you were given an Experimental ID number. Please note that your Experimental ID number and the seating chart are not linked to your actual identity. In other words, the experimenter cannot link any of your choices in this experiment to your identity.

This experiment will take place in five Parts. In Part 1 you will participate in a simple survey that will take just a few minutes. For your participation in the survey, you will be paid '10' Egyptian pounds.

In Part 2 you will be asked to make a simple choice involving taxi routes that we will explain to you later.

In Part 3, you will complete a series of tasks via the computer. For each successfully completed task, you will receive a payment of L.E 4. The tasks involve a series of simple math problems. In the math problems you will be asked to add, subtract, multiply, or divide some numbers. For example, you may be asked to solve the following simple math problem: 31 + 15 = ? . You will be given five minutes to answer 12 math questions. The more correct answers you complete, the more money you will receive. So if you complete 10 correct questions, you will receive 40 Egyptian pounds. *Note that the use of calculators is not allowed in this room. You can just use the pen and paper provided on your table.*

In Part 4, you will be given another set of 12 math questions which are similar in difficulty to the ones in Part 3, and you will also be given five minutes to answer these math questions. Again, you will be paid based on the number of correctly answered questions.

In part 5, you will answer a survey of just one question. We will now begin Part 1 of the experiment, the survey.

Part 1: The Survey

Suppose the following activities are the activities of three different student societies at the faculty:

Society Name	Activities
Society X	- Hosting a popular cabinet minister to present the achievements of his ministry. - Demanding the toughening of sentences for those students who trigger riots inside campus.

	- Rejecting the attempts made by some students to disrespect university professors.
Society Y	- Organising a singing party every term where a famous singer is invited. - Organising a discussion session with a novelist whose latest novel received reservations by the censorship authority, to present his point of view. - Organising the annual 'prom' party in a famous hotel where students from all years are allowed.
Society Z	- Forming groups to learn the good recitation of Quran. - Producing a wall journal that discusses in each edition the interpretation of some of Prophet Mohamed's lessons (*hadith*). - Hosting a sheikh to talk about certain topics.

Q1: Suppose you were asked to join one of the above mentioned student societies, which one will you choose based on these activities?

- Society X
- Society Y
- Society Z

Q2: To what extent do you feel close to the society you chose?

- Very close
- Close
- Not very close

Part 2:

We will now begin Part 2, the taxi choice. Imagine that there are six possible routes that a taxi could take from your home to Cairo airport. You have 15 Egyptian pounds to spend on your taxi ride and any extra money that you do not spend you will get to keep. Each route could hit high or

low traffic. The taxi fare depends on whether you face high or low traffic. The table below shows the different taxi routes and taxi fare associated with each traffic level:

Routes	Traffic	Taxi Fare
1	Low	5.6
	High	5.6
2	Low	4.8
	High	7.2
3	Low	4
	High	8.8
4	Low	3.2
	High	10.4
5	Low	2.4
	High	12
6	Low	0.4
	High	14

Please notice the six pieces of paper on the white board in front of the room. Behind these pieces of paper is written whether the traffic will be high of low for each of the routes. After you choose a taxi route, then we will reveal what is written behind the pieces of paper and you will learn what you will earn. You will then find that your L.E 15 are deducted by the cost of the taxi route you have chosen given the traffic conditions and you will get to keep all of the money left over. So suppose you choose taxi route 4 and the traffic turns out to be high. You will earn 15 – 10.4 = 4.6 Egyptian pounds.

Just to be sure you understand how this part of the experiment works, please answer the following question: Suppose you choose taxi route 3 and the traffic turns out to be low. How much will you earn? _____

[If they answer the question incorrectly, they are told that they answered it incorrectly, and are given the explanation again of how the question works and given a chance to answer again].

Now please choose a taxi route:

____ Route 1

____ Route 2

____ Route 3

____ Route 4

____ Route 5

____ Route 6

We now will reveal the traffic conditions for the different routes. (The experimenter removes the papers from the white board).

Part 3:

We will now begin Part 3, the math problems. In this part, you will have 12 math questions and you will be given 5 minutes to answer these questions. *No calculator is allowed*.

- 23 – 19
- 2 + 7
- 12 – 3
- 23 – 16
- 44 – 39
- 35 – 29
- 3 x 3
- 5 + 4
- 3 + 6
- 3 + 2
- 20 – 18

- 68 – 59

In this part of the experiment, you answered "xx" questions correctly. Each correct answer was worth L.E 4. Your total earnings in this part are "xxx" pounds.

Part 4:

We now turn to Part 4 in which you will also answer similar math questions as in Part 3. Again you will be given 5 minutes to answer the 12 math questions. Before working the problems, however, you will first vote between two Options A and B. You can vote for Option A in which you continue to answer the problems but will be rewarded only L.E 2 for every correct answer. You can vote for Option B in which you pay a price of L.E 10 before you participate but you will be rewarded, as before, L.E 4 for every correct answer. Everyone will vote for either Option A or B. If the majority votes for Option A, then everyone will continue to work the problems and be rewarded only L.E 2 for each correct answer. If the majority votes for Option B, then everyone will find their earnings deducted by L.E 10 but will be rewarded L.E 4 for every correct answer.

The L.E 10 that will be deducted from everyone will be added together and spent on the activities supported by the Society that has voted the most in favour of Option B, *IF Option B wins*. If two societies tied for the most votes for Option B, the experimenters will keep the money.

If, on the other hand, option A wins, no money will be deducted from any subject and hence no money will be spent on the society that voted most for option B.

Here is an example for illustration:

"Suppose there are 15 voters in the room; 10 of which voted for option B and the remaining 5 voted for option A. Knowing that society Y was the one that voted most for option B, while societies X and Z voted most for option A."

Voting outcome: option B wins.

Society Allocation of the L.E 10 deducted from each subject: Society Y will get the sum of the deducted money.

Quiz:

Just to be sure you understand, please answer the following questions:

1. "Suppose that there are 15 of you in this room and that 11 voted for option A and the remaining 4 voted for option B. Knowing that society X was the one that voted most for option B, while societies Y and Z voted most for option A".
    - Which Option Won the Election?
        i. ____ Option A
        ii. ____ Option B
    - Which Society received the 10 pounds?
        iii. _____ Society X
        iv. _____ Society Y
        v. _____ Society Z
        vi. _____ None of the Societies

2. "Suppose that there are 15 of you in this room and that 9 voted for option B and the remaining 6 voted for option A. Knowing that society Y was the one that voted most for option B, while societies X and Z voted most for option A".

- Which Option Won the Election?

  vii. ____ Option A

  viii. ____ Option B

- Which Society received the 10 pounds for everyone?

  ix. _____ Society X

  x. _____ Society Y

  xi. _____ Society Z

  xii. _____ None of the Societies

Now, before voting between Options A or B, you will be told about the choices made between these two Options in a previous session of this experiment by Society affiliation. That is, in one of the previous sessions, we brought in subjects just like you and they completed the same survey that you completed in Part 1 and voted between Options A and B just like you will be voting between Options A and B in a few minutes. The results from that previous session were as follows:

"The Society that voted most for Option B was Society Z and the Societies that voted most for Option A were Societies X and Y."

How do you vote in the election? (this choice is your binding vote):

____ Option A

____ Option B

The results of the election are that Option "?" wins. [Votes are revealed by Society Affiliation]. If Option B wins, then it is announced which Society receives the collected sum of 10 pounds from each subject. You will now complete the task under Option "?".

Subjects complete task.

Part 5: End of the Experiment Survey

Thank you for participating in this experiment. You have earned XXX Egyptian pounds in this experiment. Before paying you, we would like to ask you the following question:

What were your reasons for voting for the Option you chose?

[subjects have open ended space to complete answer].

(After completing the question subjects see the following): We will now pay you by your experimental ID. We will bring to you your payments privately in an envelope.

Appendix F

Chapter 5: Subject Instructions for all treatments

Welcome to the experiment. During the following experiment, we require your complete attention, and ask you to follow the instructions carefully. Please turn off your cell phones. Please raise your hands if you have any questions; the experimenter will come to you privately and answer your questions.

As you entered the experimental laboratory you were given an Experimental ID number. Please note that your Experimental ID number and the seating chart are not linked to your actual identity. In other words, the experimenter cannot link any of your choices in this experiment to your identity.

This experiment has five parts, which we describe below. The payments you receive will depend partly on the choices you make as well as the choices made by others in the experiment.

Part I: First Survey

In this part of the experiment you will answer a set of survey questions. Please answer as best as you can. For each question, you will receive a fixed payment of 2 Egyptian pounds.

1. What is your gender? Male or Female
2. What is your age? ——
3. Which study year are you in? First, Second, Third, Fourth, Postgraduate
4. What is your religion? Muslim, Christian, Other
5. For each of the following statements, please indicate the likelihood that you would engage in the described activity or behaviour if you were to find yourself in that situation. Provide a rating from: Extremely Unlikely (1) to Extremely Likely (7):
    a. Admitting that your tastes are different from those of a friend.
    b. Disagreeing with an authority figure on a major issue.
    c. Choosing a career that you truly enjoy over a more secure one.
    d. Moving to a city far away from your extended family.
    e. Starting a new career in your mid-thirties.
    f. Speaking your mind about an unpopular issue in a meeting at work.
6. We are interested in how you see yourself. Please mark how well the following pairs of words describes you (options extremely poorly (1), somewhat poorly, a little poorly, neither poorly nor well, a little well, somewhat well, extremely well (7)):
    a. Extraverted, enthusiastic
    b. Critical, quarrelsome
    c. Dependable, self-disciplined
    d. Anxious, easily upset
    e. Open to new experiences, complex

f. Reserved, quiet

g. Sympathetic, warm

h. Disorganised, careless

i. Calm, emotionally stable

j. Conventional, uncreative

7. Were you a student at the university and eligible to vote in the last student union election? Yes or No
8. If the answer to the above is yes, then: Did you vote in the last student union election? Yes or no
9. Are you interested in student union elections? (Very interested 1 to Not Interested at all 5)
10. Have you ever run for an office or thought about running for office in the student union? (yes or no) If answered yes, identify which office: ——.
11. How often would you say that you can trust other people? Always, Most of the time, Half of the time, Once in a while, Never, Don't know.
12. How often would you say that you can trust politicians? Always, Most of the time, Half of the time, Once in a while, Never, Don't know.

Part II: Videos

In this part you will watch two short videos. After the videos you will be asked a question about the information contained in the videos. You will be paid L.E 2 on the correct answer. Please pay attention to the videos.

Treatment T0 – Baseline – Subjects watch a neutral, boring video. Instructions before the video: "This video is a news report on a new discovery. Please pay attention to the video."

Treatment T1 – Positive Campaign – Subjects watch a video where candidates are described as behaving positively in the campaign. Instructions before the video: "This video is news coverage of a hypothetical election to decide the president of the university student's union. Please pay attention to the video."

Treatment T2 – Negative Personality Campaign – Subjects watch a video where candidates are described as behaving negatively in personality claims in the campaign. Instructions before the video: "This video is news coverage of a hypothetical election to decide the president of the university student's union. Please pay attention to the video."

Treatment T3 – Negative Policy Campaign – Subjects watch a video where candidates are described as behaving negatively in policy claims in the campaign. Instructions before the video: "This video is news coverage of a hypothetical election to decide the president of the university student's union. Please pay attention to the video."

Question on Video:

Please answer the following question. If you get the question right you will receive L.E 2.

T0 Question: "Garra Smarti" is the name of the fish discovered in the Arab region by a PhD student residing in the United Arab Emirates. True or False?

T1 Question: Candidate 'A' would like to have greater integration of students on a regular basis in the decision-making process of the Union. True or False?

T2 Question: Candidate 'A' claims that candidate 'B' is too busy with Karate to do a good job as the Union President. True or False?

T3 Question: Candidate 'A' claims that candidate 'B' is making promises about grade changes that are not possible within the powers of the Union. True or False?

Part III: Second Survey

"Please answer the questions below. There is no right/wrong answer, this is just to know your views."

T0 Question:

1. If the student union election is to be held tomorrow, will you vote in it? Yes or No?

T1, T2, and T3 Question:

1. If the student union election, covered by the video, is to be held tomorrow, will you vote in it? Yes or No?

All treatments questions:

2. Those who have answered 'no' to the vote intention question are asked:

"Why don't you like to vote?" Answer options, 1- Because I think none of the candidates deserve my vote. 2- Because I do not have enough information about the candidates 3- Because I think students' union election are not important, 4- Because I would rather not vote in general, 5- Another reason, please write ___ (Subjects may choose more than one answer in order of importance).

Part IV: The Game

"You are now going to play a simple game. In the game there are two players, First Mover and Second Mover. You will be assigned to be one of these roles and matched with another player in the room anonymously who will play the other role. The First Mover will be given L.E 70[1]. The First Mover will then decide how much of the L.E 70 to give to the Second Mover. The First Mover can give any integer amount. That is, the First mover can give 0, 1, 2, 3 … up to L.E 70 to the Second Mover. Whatever the First Mover does not give to the Second Mover, he/she gets to keep. The First Mover can decide to keep all of the L.E 70 or give all of it away or divide it any way he/she wishes. So if the First Mover gives L.E 20 to the Second Mover, the First Mover keeps 70–20=50. Or if the First Mover gives L.E 50 to the Second Mover, the First Mover keeps 70–50=20 Egyptian pounds.

Once the First Mover decides how much to give to the Second Mover, then that amount will be doubled before the Second Mover receives the money. That is, if the First Mover decides to give the Second Mover L.E 30, the Second Mover will actually receive 30 x 2 = L.E 60. Or if the First Mover gives the Second Mover L.E 0, the Second Mover

[1] This is equivalent to $10, as per the exchange rate prevailing at that time.

gets 0 x 2 = L.E 0. Or if the First Mover gives the Second Mover L.E 50, the Second Mover gets 50 x 2 = L.E 100.

After the Second Mover receives the money from the First Mover, which has been doubled, then he/she will have the opportunity to give back some of that money to the First Mover. Whatever she/he does not give back he/she can keep. So for example, suppose the First Mover gave the Second Mover L.E 40. The Second Mover then receives 40 x 2 = L.E 80. The Second Mover then can give back to the First Mover any amount of the L.E 80 and keep the rest.

Before playing this game, please answer the following quiz questions. You must get these questions correct before you can play the game. (If they answer incorrectly they get a message telling them their answer is incorrect. They can go back to the previous screen to re-read the instructions, if they wish).

1. Suppose that the First Mover chooses to give the Second Mover L.E 10. How much will the Second Mover receive? L.E 10, L.E 70 – 10, L.E 20.
2. Suppose that the First Mover chooses to give the Second Mover L.E 50. How much can the Second Mover give back to the First Mover? Any amount less than or equal to L.E 50, Any amount greater than or equal to L.E 100, Any amount less than or equal to L.E 100.
3. Suppose that the First Mover chooses to give the Second Mover L.E 20 and the Second Mover chooses to keep L.E 30. How many Egyptian pounds does the First Mover have after the game is over? L.E 30, L.E 10, L.E 40, L.E 70 – 20 + 10.

Now you will play the game."

Subjects will simply be told you are a first mover or you are a second mover and play the game.

Part V: Post-Experiment Questionnaire

Thank you for participating in this experiment. You have earned XXX Egyptian pounds in this experiment. Before paying you, we would like you to answer the following questions:

1. Were you a First Mover in the experiment? Yes or No
2. If Yes, then "Why did you give the amount you gave to the Second Mover?"
3. If Yes, then "Why do you think the Second Mover gave you back the amount he/she gave you?"
4. If No, then "Why did you give back the amount you gave to the First Mover?"
5. If No, then "Why do you think the First Mover gave you the amount he/she gave you?"
6. If given a choice, which position would you like to have? First Mover or Second Mover?
7. Why did you make the choice you made in #6?
8. Generally speaking, would you say that most people can be trusted or that you can't be too careful dealing with people? Most people can be trusted; some people can be trusted, but not all; I can't be too careful dealing with people.

(After completing the questions, subjects see the following): We will now pay you by your experimental ID. We will bring to you your payments privately in an envelope.

Appendix G

Chapter 5: Videos' Scripts

(A sample from each treatment)

I. <u>Baseline treatment (T0) – boring news coverage:</u>

Welcome…

The following is a summary of the most important events of today.

A PhD student residing in the United Arab Emirates discovered a new type of fresh water fish in the Arab region, which she named "Garra Smarti".

The student Emma Smart, a member in the Emirates Association for Fungal life team - the World Wide Fund for Nature (EWS-WWF), has managed to discover that fish, saying "it is a very exciting discovery, and I am pleased that my project and research have led to the detection of this unique type of fish. This discovery demonstrates our lack of information about the region, and the possibility of the existence of more types of fungal life undiscovered yet. "

It is noteworthy that, until now there were only sixteen major species registered of freshwater fish in various parts of the Arabian Peninsula, which underlines the importance of the new discovery and enhances the unique and great environmental value of the valleys in the Arab region.

This new type of fish differs from the others in a number of features, including the existence of three fins, the relatively small weight, the head is small and often protracted, and having prominent teeth like a small tusk.

It is expected that this new scientific discovery will be introduced in a scientific conference organised during the next summer in the Belgian capital, Brussels, a conference that has traditionally gained a wide academic and media attention.

Thank you for watching, we will bring you more details in the upcoming newscasts...

II. Treatment One (T1) – coverage of positive campaigning:

Welcome…

The following is a summary of the most important events that happened today with respect to the election campaign of the two candidates running for President of the University's Student Union.

Candidate "A" organised today an election rally in the hall allocated by the university administration for that purpose. He presented the main pillars of his election manifesto. These included greater integration of students – and on a regular basis – in the decision-making process within the Union. This will be done by conducting regular opinion polls on the Union's website to identify the most important demands of the students, their opinions on the many services that are offered to them, how satisfied they are with those services, as well as their suggestions of any activities they want the Union to organise in the next month.

The same hall witnessed two hours later an election rally by Candidate "B", attended by almost the same number of students as the first meeting. Candidate "B" also used the meeting to present his most important election promises. He mentioned that he would take the initiative to publicise what he called a 'periodical statement of activities' at the end of each month on the Union's

website. In this statement he would frankly present what he had implemented in the previous month with respect to the election promises he made during the election time as well as what could not be implemented, out of a belief – from his side – in accountability and transparency.

This was our coverage of the most important events that happened today between the two candidates running for President of the University's Student Union.

Thank you for watching. We will provide you with more details in the following news bulletins.

III. Treatment two (T2) – coverage of negative campaigning targeting personality of opponent:

Welcome…

The following is a summary of the most important events that happened today with respect to the election campaign of the two candidates running for President of the University's Student Union.

Following their election rallies both candidates went on the attack.

From his side, Candidate "A" gave an interview to the university newsletter, in which he stated that Candidate "B" has in fact falsified his nomination papers, and that he did not win a National Championship in Karate as he claims. According to Candidate "A", Candidate "B" does not play Karate in the first place but made this claim as a desperate attempt to match the great sporting record of Candidate "A" aiming at winning votes by fraud. In addition, Candidate "A" said that he would provide documents to prove this to the election committee supervising the elections in order to take the necessary punitive actions against Candidate "B", and that he was certain of what he was saying.

On his end, and in response to that, Candidate "B" said that Candidate "A" was the one who should not be on the list of candidates because he was caught cheating in one of the exams he sat for when he was still freshman in his faculty. Candidate "B" added that a report was filed

regarding that incident back then, hence Candidate “A” is the one who should be ashamed of himself, especially that the official documents of that cheating incident are still there and will be examined by the election committee in the next few days.

This was our coverage of the most important events that happened today between the two candidates running for President of the University’s Student Union.

Thank you for watching. We will provide you with more details in the following news bulletins.

IV. Treatment three (T3) – coverage of negative campaigning targeting policies of opponent:

Welcome…

The following is a summary of the most important events that happened today with respect to the election campaign of the two candidates running for President of the University’s Student Union.

Following their election rallies both candidates went on the attack.

From his side, Candidate "A" gave an interview to the university newsletter, in which he stated that the electoral program of Candidate "B" exaggerates in giving promises that cannot be achieved and hence is in fact tricking students in order to gain votes. An example is that Candidate “B” promises to work on changing the bylaws of the individual faculties to redistribute the term grades to make the new distribution more favourable to students, although this is not in the authority of the Union in the first place – something that can be easily found out by reading the Union’s bylaw. He wondered how Candidate “B” could actually make these promises although he is supposed to be fully aware that they were not within the powers of the Union.

On his end, and in response to that, Candidate "B" said that Candidate "A" is the one who makes this mistake because he mentions in his election manifesto that he would double the number of sport and entertainment activities that the Union would organise in case he wins the elections

although the money earmarked for these activities in the Union's budget for next year is in fact 50% less than what was earmarked to these items in this year's budget. This then raises many doubts on whether Candidate "A" could fulfill this election promise which he makes a central one in his manifesto, especially that he didn't mention in any part of the manifesto his intention to create new sources of income for the Union, making everybody wonder where the money would come from.

This was our coverage of the most important events that happened today between the two candidates running for President of the University's Student Union.

Thank you for watching. We will provide you with more details in the following news bulletins.

Bibliography

Abbink, K. (2006) Laboratory Experiments on Corruption. In: Rose-Ackerman, S. eds. *International Handbook on the Economics of Corruption*. Cheltenham, UK: Edward Elgar:

Abbink, K., Irlenbusch, B. & Renner, E. (2000) The moonlighting game: An experimental study on reciprocity and retribution. *Journal of Economic Behavior & Organization*, 42 (2): 265-277.

Abbink, K., Irlenbusch, B. & Renner, E. (2002) An Experimental Bribery Game. *Journal of Law, Economics, and Organization*, 18 (2): 428-454.

Abouleinein, S., El-Laithy, H. & Kheir-El-Din, H. (2009) *The Impact of Phasing Out Subsidies of Petroleum Energy Products in Egypt*. Cairo, Egypt:

Acemoglu, D. & Robinson, J. (2001) A Theory of Political Transitions. *American Economic Review*, 91 (4): 938-963.

Acemoglu, D. & Robinson, J. (2006) *Economic Origins of Dictatorship and Democracy*. Cambridge: Cambridge University Press.

Acemoglu, D. & Robinson, J. (2013) *Why Nations Fail: The Origins of Power, Prosperity and Poverty*. London: Profile Books LTD.

Al-Ubaydli, O., Houser, D., Nye, J., Paganelli, M. & Pan, X. (2013) The Causal Effect of Market Priming on Trust: An Experimental Investigation Using Randomized Control. *PLoS One*, 8 (3):

Alesina, A. & Drazen, A. (1991) Why Are Stabilizations Delayed? *American Economic Review*, 81 (5): 1170-1188.

Alesina, A. & Rosenthal, H. (1995) *Partisan Politics, Divided Government and the Economy*. New York: Cambridge University Press.

Alesina, A. & Tabellini, G. (1990) A Positive Theory of Fiscal Deficits and Government Debt. *Review of Economic Studies*, 57 (3): 403-414.

Ali, S. (2014) Brotherhood fails to invade Tahrir and marches against price increases. *Almasry-Alyoum Newspaper*

Allingham, M. G. & Sandmo, A. (1972) INCOME TAX EVASION: A THEORETICAL ANALYSIS. *Journal of Public Economics*, 1 (3/4): 323.

Alm, J. (1999a) Tax Compliance and Administration. In: Hildreth, W. B. & Richardson, J. A. eds. *Handbook on Taxation*. New York: NY: Marcel Dekker, Inc.: 741-768.

Alm, J. (1999b) Tax Compliance and Administration. In: eds. *Handbook on Taxation*. New York: Marcel Dekker:

Alm, J., Bloomquist, K. & McKee, M. (2011) *On the external validity of tax compliance experiments*. IN: New Perspectives on Tax Administration: An IRS-TPC Research Conference. Conference:Location.

Alm, J. & Cronshaw, M. (1995) Tax Compliance with Two-Sided Uncertainty. *Public Finance Review*, 23 (2): 139-166.

Alm, J. & Gomez, J. L. (2008) Social Capital and Tax Morale in Spain. *Economic Analysis & Policy*, 38 (1):

Alm, J., Jackson, B. & McKee, M. (1992a) Deterrence and Beyond: Toward a Kinder, Gentler IRS. In: Slemrod, J. eds. *Why People Pay Taxes*. Ann Arbor: University of Michigan Press: 311-329.

Alm, J. & Jackson, B. R. (1993) Fiscal exchange, collective decision institutions, and tax compliance. *Journal of Economic Behavior & Organization*, 22 (3): 285.

Alm, J., Jackson, B. R. & McKee, M. (1992b) Estimating the determinants of taxpayer compliance with experimental data. *National Tax Journal*, 45 (1): 107-114.

Alm, J., Jackson, B. R. & McKee, M. (1993) Fiscal exchange, collective decision institutions, and tax compliance. *Journal of Economic Behavior & Organization*, 22 (3): 285.

Alm, J., Martinez-Vazquez, J. & Schneider, F. (2004) 'Sizing' the Problem of the Hard-to-Tax. In: Alm, J., Martinez-Vazquez, J. & Wallace, S. eds. *Taxing the Hard-to-tax: Lessons from Theory and Practice*. Amsterdam, The Netherlands, Elsevier B. V: North Holland Publishers: 11-75.

Alm, J., McClelland, G. H. & Schulze, W. D. (1992c) Why do people pay taxes? *Journal of Public Economics*, 48 (1): 21.

Alm, J., McClelland, G. H. & Schulze, W. D. (1999) Changing the Social Norm of Tax Compliance by Voting. *Kyklos*, 52 (2): 141-171.

Alm, J. & McKee, M. (2004) Tax compliance as a coordination game. *Journal of Economic Behavior & Organization*, 54 (3): 297-312.

Alm, J. & McKee, M. (2006) Audit Certainty, Audit Productivity, and Taxpayer Compliance. *National Tax Journal*, 59 (4): 801-816.

Almond, G. & Verba, S. (1963) *The Civic Culture*. NJ: Princeton University Press.

Alt, J., Bueno de Mesquita, E. & Rose, S. (2009) Disentangling Accountability and Competence in Elections: Evidence from U.S. Term Limits. *Journal of Politics*, 73 171-186.

Anderson, C., Blais, A., Bowler, S., Donovan, T. & Listhaug, O. (2005) *Losers' Consent*. Oxford: Oxford University Press.

Anderson, L., Mellor, J. & Milyo, J. (2010) Did the Devil Make Them Do It? The Effects of Religion in Public Goods and Trust Games. *Kyklos*, 63 163-175.

Andreoni, J., Erard, B. & Feinstein, J. (1998) Tax compliance. *Journal of Economic Literature*, 36 (2): 818.

Ansolabehere, S. & Iyengar, S. (1996) *The Science of Political Advertising: Political Persuasion and Attitude Change*. Ann Arbor, MI: University of Michigan Press.

Ansolabehere, S., Iyengar, S., Valentino, N. & Simon, A. (1994) Does Attack Advertising Demobilize the Electorate? *American Political Science Review*, 88 (4): 829-838.

Antar, A. (2014) Mahmoud Badr: If you do not like the path, stage a revolution, remove al-Sisi and put me on trial with him. *El-Watan Newspaper*

Aslund, A. (1995) *How Russia Became a Market Economy*. Washington, D.C.: Brookings Institution.

Bai, C.-E. & Wei, S.-J. (2000) *Quality of Bureaucracy and Open-Economy Macro Policies*.

Bailey, J. & Valenzuela, A. (1997) The Shape of the Future. *Journal of Democracy*, 8 (4): 43-57.

Ball, T. ed. (1992) *James Mill: Political Writings*. Cambridge: Cambridge University Press.

Bardhan, P. (1997) Corruption and development: A review of issues. *Journal of Economic Literature*, 35 (3): 1320.

Bargh, J. & Chartrand, T. (2000) A Practical Guide to Priming and Automaticity Research. In: Reis, H. & Judd, C. eds. *Handbook of Research Methods in Social Psychology*. Cambridge: Cambridge University Press: 253-285.

Bartlett, D. (1997) *The Political Economy of Dual Transitions: Market Reform and Democratization in Hungary*. Ann Arbor: University of Michigan Press.

Beck, P., Davis, J. & Jung, W.-O. (1992) Experimental evidence on an economic model of taxpayer aggression under strategic and nonstrategic audits. *Contemporary Accounting Research*, 9 (1): 86-112.

Becker, G., DeGroot, M. & Marschak, J. (1964) Measuring utility by a single-response sequential method. *Behavioural Science*, 9 226-232.

Becker, G. S. (1968) Crime and Punishment: An Economic Approach. *Journal of Political Economy*, 76 (2): 169.

Bellemare, C. & Kroger, S. (2007) On Representative Social Capital. *European Economic Review*, 51 183-202.

Benjamin, D., Choi, J. & Strickland, A. (2010) Social Identity and Preferences. *American Economic Review*, 100 1913-1928.

Berg, J., Dickhaut, J. & McCabe, K. (1995) Trust, Reciprocity and Social History. *Games and Economic Behavior*, 10 122-142.

Besley, T. (2007) The New Political Economy. *The Economic Journal*, 117 (524): F570-F587.

Besley, T. & Case, A. (1995) Does Electoral Accountability Affect Economic Policy Choices? Evidence from Gubernatorial Term Limits. *Quarterly Journal of Economics*, 110 769-798.

Besley, T. & Case, A. (2003) Political Institutions and Policy Choices: Evidence from the United States. *Journal of Economic Literature*, 41 (1): 7-73.

Blatter, D. & Buzzell, Z. (2013) *The Subsidy Trap: Why Tunisia's Leaders Are Unwilling, Unable, or Afraid to Abandon Fuel Subsidies*.

Blume, A. & Sobel, J. (1995) Communication-Proof Equilibria in Cheap Talk Games. *Journal of Economic Theory*, 65 (2): 359-382.

Blumenthal, M., Christian, C. & Slemrod, J. (2001) Do Normative Appeals Affect Tax Compliance? Evidence from a Controlled Experiment in Minnesota. *National Tax Journal*, 54 (1): 125-138.

Bosco, L. & Mittone, L. (1997) Tax evasion and moral constraints: Some experimental evidence. *Kyklos*, 50 (3): 297.

Bourdieu, P. (1977) *Outline of a Theory of Practice*. Cambridge, United Kingdom: Cambridge University Press.

Brewer, M. B. & Brown, R. J. (1998) Intergroup Relations. In: Gilbert, D. T., Fiske, S. T. & Lindzey, G. eds. *Handbook of Social Psychology*. 4th edn. Boston, Mass.: McGraw-Hill: 554-594.

Brians, C. & Wattenberg, M. (1996) Campaign Issue Knowledge and Salience: Comparing Reception from TV Commercials, TV News, and Newspapers. *American Journal of Political Science*, 40 (1): 172-193.

Brunell, T. (2005) Rethinking Redistricting: How Drawing Uncompetitive Districts Eliminates Gerrymanders, Enhances Representation, and Improves Attitudes Towards Congress. *Political Science & Politics*, 39 77-85.

Bruszt, L. & Stark, D. (1997) *Post-Socialist Pathways: Transforming Politics and Property in East Central Europe*. Cambridge: Cambridge University Press.

Burki, S. J. & Perry, G. E. (1998) *Beyond the Washington Consensus : institutions matter*. Washington DC:

CAPMAS (2013) *Annual Statistical Yearbook for the Arab Republic of Egypt*.

Cason, T. & Mui, V.-L. (2003) Testing political economy models of reform in the laboratory. *American Economic Review*, 93 208–212.

Cason, T. & Mui, V.-L. (2005) Uncertainty and resistance to reform in laboratory participation games. *European Journal of Political Economy*, 21 708–737.

Castel, V. (2012) *Reforming Energy Subsidies in Egypt*. [online] Available from: http://www.afdb.org/fileadmin/uploads/afdb/Documents/Publications/ECON%20Vincent%20notes%20mars%202012_ECON%20Vincent%20notes%20mars%202012.pdf (Accessed 2nd of August 2014).

Coady, D., El-Said, M., Gillingham, R., Kpodar, R., Medas, P. & Newhouse, D. (2006) *The Fiscal and Social Costs of Fuel Subsidies: Evidence from Bolivia, Ghana, Jordan, Mali and Sri Lanka*. Washington, DC:

Coleman, J. (1988) Social Capital in the Creation of Human Capital. *American Journal of Sociology*, 94 95-120.

Commander, S. (2012) *A Guide to the Political Economy of Reforming Energy Subsidies*. Bonn:

Cook, T. & Gronke, P. (2005) The Skeptical American: Revisiting the Meanings of Trust in Government and Confidence in Institutions. *The Journal of Politics*, 67 (3): 784-803.

Cowell, F. (1990) *Cheating the Government: The Economics of Evasion*. Cambridge: MA: The MIT Press.

Cowell, F. A. & Gordon, J. (1988) Unwillingness To Pay: Tax Evasion and Public Good Provision. *Journal of Public Economics*, 36 (3): 305-321.

Craig, S. & Rippere, P. (2014) Political Trust and Negative Campaigns: Two Tests of the Figure-Ground Hypothesis. *Politics & Policy*, 42 (5): 693-743.

Crawford, V. P. & Sobel, J. (1982) Strategic Information Transmission. *Econometrica*, 50 (6): 1431-1451.

Croson, R. & Gneezy, U. (2009) Gender Differences in Preferences. *Journal of Economic Literature*, 47 448-474.

Danielson, A. & Holm, H. Do You Trust Your Brethren? Eliciting Trust Attitudes and Trust Behavior in a Tanzanian Congregation. *Journal of Economic Behavior and Organization*, 62 255-271.

Dasgupta, P. & Serageldin, I. (2000) *Social Capital: A Multifaced Perspective*. Washington, D.C.: The World Bank.

Drazen, A. & Ozbay, E. Y. (2014) How Do Elected and Appointed Policymakers Act When In Office? Experimental Evidence on Citizens, Candidates, and Leaders.

Dufwenberg, M., Gachter, S. & Hennig-Schmidt, H. (2011) The Framing of Games and the Psychology of Play. *Games and Economic Behaviour*, 73 459-478.

Eckel, C. & Grossman, P. (2008) Forecasting risk attitudes: An experimental study using actual and forecast gamble choices. *Journal of Economic Behavior and Organization*, 68 (1): 1-17.

El-Zoghby, S. (2014) Mahlab's Cabinet on the footsteps of Mubarak: Lifting subsidies and on the pretext of better targeting. *El-Watan Newspaper*

Erard, B. & Feinstein, J. S. (1994a) Honesty and Evasion in the Tax Compliance Game. *Journal of Economics*, 25 (1): 1-20.

Erard, B. & Feinstein, J. S. (1994b) The Role of Moral Sentiments and Audit Perceptions in Tax Compliance. *Public Finance*, 49 (0): 70-89.

Evans, J. (2008) Dual-processing Accounts of Reasoning, Judgment, and Social Cognition. *Annual Review of Psychology*, 59 255-278.

Falkinger, J. & Walther, H. (1991) Rewards Versus Penalties: on a New Policy against Tax Evasion. *Public Finance Review*, 19

Farrell, J. & Gibbons, R. (1989) Cheap Talk with Two Audiences. *American Economic Review*, 79 (5): 1214-1223.

Fehr, E. & Schmidt, K. (2004) Fairness and Incentives in a Multi-Task Principal-Agent Model. *The Scandinavian Journal of Economics*, 106 (3): 453-474.

Fernandez, R. & Rodrik, D. (1991) Resistance to reform: status quo bias in the presence of individual-specific uncertainty. *American Economic Review*, 81 (5): 1146-1155.

Ferraz, C. & Finan, F. (2011) Electoral Accountability and Corruption in Local Governments: Evidence from Audit Reports. *American Economic Review*, 101 1274-1311.

Finkel, S. & Geer, J. (1998) Spot Check: Casting Doubt on the Demobilizing Effect of Attack Advertising. *American Journal of Political Science*, 42 573-595.

Fiorina, M. (1996) *Divided Government*. Boston: Alwyn Bacon.

Fischbacher, U. (2007) z-Tree: zurich toolbox for ready-made economic experiments. *Experimental Economics*, 10 171-178.

Fischbacher, U. & Schuddy, S. (2014) Reciprocity and Resistance to Comprehensive Reform. *Public Choice*, 160 (3-4): 411-428.

Fiske, S. (1980) Attention and Weight in Person Perception: The Impact of Negative and Extreme Behavior. *Journal of Personality and Social Psychology*, 38 (6): 889-906.

Freedman, P., Franz, M. & Goldstein, K. (2004) Campaign Advertising and Democratic Citizenship. *American Journal of Political Science*, 48 (4): 723-741.

Frey, B. S. (1997) A Constitution for Knaves Crowds Out Civic Virtues. *Economic Journal*, 107 1043-1053.

Frey, B. S. & Feld, L. P. (2002) *Deterrence and Morale in Taxation: An Empirical Analysis*.

Frye, T. (2002) The Perils of Polarization: Economic Performance in the Postcommunist World. *World Politics*, 54 (3): 308-337.

Fuest, C., Maffini, G. & Riedel, N. (2013) Do Corruption and Taxation Affect Corporate Investment in Developing Countries? In: Fuest, C. & Zodrow, G. R. eds. *Critical Issues in Taxation and Development*. Cambridge: MA: MIT Press:

Gadarian, S. K. & Lau, R. (2011) Candidate Advertisements. In: Druckman, J., Green, D., Kuklinski, J. & Lupia, A. eds. *Cambridge Handbook of Experimental Political Science*. New York: Cambridge University Press:

Glynn, P., Kobrin, S. J. & Naim, M. (1997) The Globalization of Corruption. In: Elliott, K. A. eds. *Corruption and the Global Economy*. Institute for International Economics:

Graetz, M. J. & Wilde, L. L. (1985) THE ECONOMICS OF TAX COMPLIANCE: FACT AND FANTASY. *National Tax Journal*, 38 (3): 355-363.

Greene, S. (2004) Social Identity Theory and Party Identification. *Social Science Quarterly*, 85 (1): 136-153.

Haggard, S. (1990) *Pathways from the Periphery: The Politics of Growth in Newly Industrializing Countries*. Ithaca, N.Y.: Cornell University Press.

Haggard, S. & Kaufmann, R. (1993) *The Political Economy of Democratic Transition*. Princeton N. J.: Princeton University Press.

Hellman, J. (1994) Winners Take All: The Politics of Partial Reform in Postcommunist Transitions. *World Politics*, 50 (2): 203-234.

Higgins, E. T. (1996) Knowledge Activation: Accessibility, Applicability, and Salience. In: Higgins, E. T. & Kruglanski, A. W. eds. *Social Psychology: Handbook of Basic Principles*. New York, NY: Guilford Press: 133-168.

Holbrook, A., Krosnick, J., Visser, P., Gardner, W. & Cacioppo, J. (2001) Attitudes Toward Presidential Candidates and Political Parties: Initial Optimism, Inertial First Impressions, and a Focus on Flaws. *American Journal of Political Science*, 45 (4): 930-950.

Holmstrom, B. (1999) Managerial Incentive Problems: A Dynamic Perspective. *Review of Economic Studies*, 66 169-182.

IMF, F. A. D. (2010) *The Unequal Benefits of Fuel Subsidies: A Review of Evidence for Developing Countries*.

International Monetary Fund (2014) International Financial Statistics.

Isaac, R. M., McCue, K. F. & Plott, C. R. (1985) Public Goods Provision in an Experimental Environment. *Journal of Public Economics*, 26 51-74.

Isaac, R. M., Walker, J. M. & Thomas, S. (1984) Divergent Evidence on Free-Riding: An Experimental Examination of Possible Explanations. *Public Choice*, 43 113-149.

Jackson, L. A. & Sullivan, L. (1987) The Ingroup Favorability Bias in the Minimal Group Situation. *Journal of Social Psychology*, 127 461-472.

James, L. (2014) *Recent Developments in Sudan's Fuel Subsidy Reform Process*. Manitoba:

Johansson-Stenman, O., Mahmud, M. & Martinsson, P. (2009) Trust and Religions: Experimental Evidence from Bangladesh. *Economica*, 76 462-485.

Kahneman, D. & Tversky, A. (1979) Prospect Theory: An Analysis of Decision under Risk. *Econometrica*, 47 263-291.

Kaufmann, D., Kraay, A. & Zoido-Lobaton, P. (1999) *Governance matters*. Washington, DC:

Kaul, I., Grunberg, I. & Stern, M. ed. (1999) *Global Public Goods: International Cooperation in the 21st Century*. Oxford:

Kellermann, K. (1989) The negativity effect in interaction: it's all in your point of view. *Human Communication Research*, 16 147-183.

Kenney, P. & Fridkin, L. (2004) Do negative messages work? The impact of negativity on citizens' evaluations of candidates. *American Politics Research*, 32 (5): 570-605.

Kim, C. K. (2002) Does fairness matter in tax reporting behavior? *Journal of Economic Psychology*, 23 (6): 771.

Kim, O. & Walker, M. (1984) The Free Rider Problem: Experimental Evidence. *Public Choice*, 43 3-24.

Klein, J. (1991) Negativity Effects in Impression Formation: A Test in the Political Arena. *Personality and Social Psychology Bulletin*, 17 (4): 412-418.

Knack, S. & Keefer, P. (1997a) Does social capital have an economic payoff? A cross country investigation. *Quarterly Journal of Economics*, 112 (4): 1251-1288.

Knack, S. & Keefer, P. (1997b) Does social capital have an economic payoff? A cross country investigation. *Quarterly Journal of Economics*, 112 1251-1288.

Knight, J. (2001) Social Norms and the Rule of Law: Fostering Trust in a Socially Diverse Society. In: Cook, K. S. eds. *Trust in Society*. New York: Russell Stage Foundation: 354-373.

Kunicová, J. & Rose-Ackerman, S. (2005) Electoral Rules and Constitutional Structures as Constraints on Corruption. *British Journal of Political Science*, 35 (4): 573-606.

Lamberton, C., De Neve, J.-E. & Norton, M. I. (2014) *Eliciting Taxpayer Preferences Increases Tax Compliance*.

Lang, A., Dhillon, K. & Dong, Q. (1995) The effects of emotional arousal and valence on television viewers' cognitive capacity and memory. *Journal of Broadcasting and Electronic Media*, 39 (3): 313-327.

Lau, R. (1982) Negativity in Political Perception. *Political Behavior*, 4 (4): 353-377.

Lau, R. (1985) Two Explanations for Negativity Effects in Political Behavior. *American Journal of Political Science*, 29 (1): 119-138.

Lau, R. & Redlawsk, D. (2006) *How Voters Decide: Information Processing in Election Campaigns*. Cambridge University Press.

Lau, R., Sigelman, L. & Rovner, I. (2007) The Effects of Negative Political Campaigns: A Meta-Analytic Reassessment. *The Journal of Politics*, 69 (4): 1176-1209.

Linz, J. J. & Stepan, A. (1996) Toward Consolidated Democracies. *Journal of Democracy*, 7 (2): 14-33.

Lippmann, W. (1925) *The Phantom Public*. Transaction Publishers.

Lipsitz, K., Trost, C., Grossman, M. & Sides, J. (2005) What Voters Want from Political Campaign Communication? *Political Communication*, 22 (3): 337-354.

Lizzeri, A. & Persico, N. (2001) The provision of public goods under alternative electoral incentives. *American Economic Review*, 91 (1): 225-239.

Loewenstein, G., Rick, S. & Cohen, J. (2008) Neuroeconomics. *Annual Review of Psychology*, 59 647-672.

Luhmann, N. (1982) Trust and Power. *Studies in Soviet Thought*, 23 (3): 266-270.

Machina, M. J. (1983) Generalized Expected Utility Analysis and the Nature of Observed Violations of the Independence Axiom. In: Stigum, B. & Wenstop, F. eds. *Foundations of Utility and Risk Theory with Applications*. Holland: D. Reidel, Dordrecht:

MacKuen, M. & Marcus, G. (1994) *Affective Intelligence during a Presidential Campaign*. IN: Annual Meetings of the American Political Science Association. Conference:Location.

Mauro, P. (1995) Corruption and Growth. *Quarterly Journal of Economics*, 110 (3): 681-712.

Mayer, J. & Mussweiler, T. (2011) Suspicious Spirits, Flexible Minds: When Distrust Enhances Creativity. *Journal of Personality and Social Psychology*, 101 1262-1277.

McGraw, K. & Scholz, J. T. (1991) Appeals to Civic Virtue Versus Attention to Self-Interest: Effects on Tax Compliance. *Law and Society Review*, 25 (3): 471-498.

Nelson, J. (1990) Introduction: The Politics of Economic Adjustment in Developing Countries. In: Nelson, J. eds. *Economic Crisis and Policy Choice: The Politics of Adjustment in the Third World*. Princeton: Princeton University Press:

Nikoloski, Z. (2012) *The political economy of energy subsidies: country narratives*. Washington, USA:

Paetzel, F., Sausgruber, R. & Traub, S. (2014) Social preferences and voting on reform: An experimental study. *European Economic Review*, 70 36-55.

Persson, T., Roland, G. & Tabellini, G. E. (1997) Separation of Powers and Political Accountability. *Quarterly Journal of Economics*, 112 310-327.

Persson, T. & Tabellini, G. (1999) The Size and Scope of Government: Comparative Politics with Rational Politicians. *European Economic Review*, 43 699-735.

Pfau, M. & Kenski, H. (1990) *Attack Politics*. New York: Praeger.

Pommerehne, W. W. & Weck-Hannenmann, H. (1996) Tax rates, tax administration and income tax evasion in Switzerland. *Public Choice*, 88 (1/2): 161-170.

Posten et al., A. C. (2013) How Activating Cognitive Content Shapes Trust: A Subliminal Priming Study. *Journal of Economic Psychology*,

Powell, G. B. (2000) *Elections as Instruments of Democracy: Majoritarian and Proportional Visions*. Yale University Press.

Pradiptyo, R. & Sahadewo, G. (2012) A Growing Pain: An Experimental Approach to Discover the Most Acceptable Strategy for Lifting Fuel Subsidy Scheme in Indonesia. 32. Available from: (Accessed

Preacher, K. J. & Hayes, A. F. (2008) Asymptotic and Resampling Strategies for Assessing and Comparing Indirect Effects in Multiple Mediator Models. *Behavior Research Methods*, 40 (3): 879-891.

Przeworski, A. (1991) *Democracy and the Market: Political and Economic Reforms in Eastern Europe and Latin America*. New York: Cambridge University Press.

Putnam, R. (1993) *Making Democracy Work*. Princeton, NJ: Princeton University Press.

Putnam, R. (2000) *Bowling Alone: The Collapse and Revival of American Community*. New York: Simon & Schuster.

Pyle, D. J. (1991) The Economics of Taxpayer Compliance. *Journal of Economic Surveys*, 5 (2): 163-198.

Riker, W. H. (1982) The Two-Party System and Duverger's Law: An Essay on the History of Political Science. *The American Political Science Review*, 76 (4): 753-766.

Rodrik, D. (2007) *One Economics, Many Recipes*. Princeton: Princeton University Press.

Rose-Ackerman, S. (1999) *Corruption and Government: Causes, Consequences, and Reform*. Cambridge, UK: Cambridge University Press.

Roth, J. A., Scholz, J. T. & Witte, A. D. ed. (1989) *Taxpayer Compliance*. Philadelphia:: University of Pennsylvania Press.

Rothstein, B. (2000) Trust, Social Dilemmas and Collective Memories. *Journal of Theoretical Politics*, 12 477-501.

Sachs, J. (1995) *Poland's Jump to a Market Economy*. Cambridge: MIT Press.

Samuelson, P. (1954) The Pure Theory of Public Expenditure. *Review of Economics and Statistics*, 36 387-390.

Schul, Y., Mayo, R. & Burnstein, E. (2008) The Value of Distrust. *Journal of Experimental Social Psychology*, 44 1293-1302.

Schwartz, R. & Orleans, S. (1967) On Legal Sanctions. *University of Chicago Law Review*, 34 (winter): 282-300.

Shapiro, M. & Rieger, R. (1992) Comparing positive and negative political advertising on radio. *Journalism Quarterly*, 69 (1): 135-145.

Shleifer, A. & Treisman, D. (2000) *Without a Map: Political Tactics and Economic Reform in Russia*. Cambridge: MIT Press.

Sides, J., Lipsitz, K. & Grossman, M. (2010) Do Voters Perceive Negative Campaigns as Informative Campaigns? *American Politics Research*, 38 (3): 502-530.

Slemrod, J. & Yitzhaki, S. (2002) Tax Avoidance, Evasion, and Administration. In: Auerbach, A. J. & Feldstein, M. eds. *Handbook of Public Economics*. Amsterdam, London, and New York: Elsevier Science Publishers B.V: 1423-1470.

Smith, K. W. & Stalans, L. J. (1991) Encouraging Tax Compliance with Positive Incentives: A Conceptual Framework and Research Directions. *Law & Policy*, 13 (1): 35-53.

Spicer, M. W. & Becker, L. A. (1976) Understanding Tax Evasion. *Public Finance*, 31 (2): 295-304.

Stevens, D., Sullivan, J., Allen, B. & Alger, D. (2008) What's Good for the Goose Is Bad for the Gander: Negative Political Advertising, Partisanship, and Turnout. *Journal of Politics*, 70 (2): 527-541.

Stiglitz, J. (1999) *Whither Socialism? Ten Years of the Transition*. IN: Keynote Address to the Annual Bank Conference on Development Economics. Conference:Location.

Stolle, D. (1998) Bowling Together, Bowling Alone: The Development of Generalized Trust in Voluntary Associations. *Political Psychology*, 19 497-525.

Strack, F. & Deutsch, R. (2004) Reflective and Impulsive Determinants of Social Behavior. *Personality and Social Psychology Review*, 8 220-247.

Strack, F. & Deutsch, R. (2005) Reflection and Impulse as Determinants of Conscious and Unconscious Motivation. In: Forgas, J. P. eds. *Social Motivation: Conscious and Unconscious Processes*. Cambridge, MA: Cambridge University Press: 91-112.

Svensson, J. (1998) Investment, Property Rights, and Political Instability: Theory and Evidence. *European Economic Review*, 42 (7): 1317-1341.

Sztompka, P. (1999) *Trust: A Sociological Theory*. Cambridge: Cambridge University Press.

Tajfel, H. (1972) Some Developments in European Social Psychology. *European Journal of Social Psychology*, 2 307-322.

Tajfel, H. (1978) Social categorization, social identity and social comparisons. In: Tajfel, H. eds. *Differentiation between Social Groups*. London: Academic Press: 61-76.

Tajfel, H. & Turner, J. C. (1986) The Social Identity Theory of Intergroup Behaviour. In: Worchel, S. & Austin, W. G. eds. *Psychology of Intergroup Relations*. Chicago, Ill.: Nelson-Hall:

Tarek, M. (2014) Brotherhood of Kafr Elsheikh protest against the price increases and the aggression against Gaza. *El-Watan Newspaper*

The Ministry of Finance. (2014) *The Financial Statement for the Government Budget Plan for the year 2014-2015*.

The World Bank (1997) *Helping Countries Combat Corruption: The Role of the World Bank*.

The World Bank (2004) *The World Development Report: Making Services Work for the Poor*.

Todorov, A., Baron, S. & Oosterhof, N. (2008) Evaluating Face Trustworthiness: A Model Based Approach. *Social Cognitive and Affective Neuroscience*, 3 119-127.

Torgler, B. (2001) What Do We Know about Tax Morale and Tax Compliance? *International Review of Economics and Business (RISEC)*, 48 (3): 395-419.

Uslaner, E. (2002) *The Moral Foundations of Trust*. Cambridge: Cambridge University Press.

Webley, P., Robben, H. S. J., Elffers, H. & Hessing, D. J. (1991) *Tax Evasion: An Experimental Approach*. Cambridge, UK: Cambridge University Press.

Williamson, J. (1994) In Search of a Manual for Technopols. In: Williamson, J. eds. *The Political Economy of Policy Reform*. Washington D.C.: Institute for International Economics:

Wilson, R. & Eckel, C. (2011) Trust and Social Exchange. In: Druckman, J., Green, D., Kuklinski, J. & Lupia, A. eds. *Cambridge Handbook of Experimental Political Science*. New York: Cambridge University Press:

World Values Survey (2008) Wave 5, 2005-2008.

World Values Survey (2012) Wave 6 2010-2014 Official Aggregate v.20141107.

Zahedzadeh, G. & Merolla, J. (2012) *How do negative political ads impact public trust in candidates?* IN: The Annual Meeting of the Western Political Science

Association. Conference:Location.

Zak, P. & Knack, S. (2001a) Trust and Growth. *Economic Journal*, 111 (470): 295-321.

Zak, P. & Knack, S. (2001b) Trust and Growth. *Economic Journal*, 111 295-321.