Political Polarization and Support for Reform: Experimental Evidence from Egypt*

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Abstract

We examine whether political polarization in elections is an obstacle to reform in an incentivized laboratory experiment using natural ideological differences in Egypt. Specifically, we create societies which subjects join based on ideological preferences. Voters choose between enacting a reform, which will benefit all (but has a differential benefit for supporters of one of the societies) versus not enacting the reform and everyone receiving lower payoffs. We find that when voters are provided with information that support for the reform varies across ideological societies, they are significantly more likely to report that their vote choices are influenced by their society membership than when such information is not provided. We also find some evidence that the information influences voters’ choices in the election. We find no information effects when societies are ideologically neutral. Our results provide evidence that ideological polarization can make reform less desirable for some even when all benefit.

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I. 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%. 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% 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

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¹ We outline the case of Egypt in this paper, see Pradiptyo and Sahadewo (2012) for a discussion of the need for reform in Indonesia and James (2014) on Sudan.

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 of 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. In 2012 energy subsidies in Egypt amounted 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.
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.

In the last six years, fuel subsidy reforms have been attempted by all the major political parties in power. In 2008 Hosni Mubarak’s National Democratic Party (NDP) decreased 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 president Abdel Fatah al-Sisi, with the support of the founder of the ‘Tammarod (or Rebellion) Movement’ which led the public mobilization 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.

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. And in 2012/13 the liberal opposition to Mohamed Morsi of the Muslim Brotherhood cited as one of their principal reasons to call for his removal rising energy prizes even though they later supported Sisi’s reductions of subsidies (Antar, 2014). Yet, under Sisi, it was

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the turn of the Muslim Brothers to again reject such plans and even organise protests in opposition to the July 2014 fuel price increases (Ali et al., 2014; Tarek, 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.

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 polarization on ideological grounds between political 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 reforms becomes guided by partisanship and ideological differences unrelated to the reforms themselves, decreasing the probability that such reforms can be enacted, or increasing the risks of their adoption on incumbents.

In this paper we investigate our contention by considering the effects of ideological polarization on support for common value reforms. We do so by using an economics-style incentivized laboratory experiment, which incorporates naturally occurring political ideological divisions in Egypt (Islamist, liberal and support for deep state). In our main treatments subjects are first divided in university 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 favor 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.

In the next sections of the paper we briefly review the related literature on politics and reform. Section III outlines our theoretical argument, Section IV describes our experimental design, Section V presents our results, and Section VI concludes.

II. Related Literature

The literature on how political factors can affect economic reform received a push in the early 1990s as a result of the democratizing – and at the same time liberalizing – countries of Eastern and Central Europe (for single-country studies see Sachs, 1995; Aslund, 1995; Bruszt, 1997; Bartlett, 1997; and Shleifer and 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 (Przeworski, 1991; Williamson, 1994; Nelson, 1990; Haggard, 1990; Stiglitz, 1999). To overcome resistance from groups losing from reform

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4 University societies aligning with natural political ideologies are quite common in Egyptian universities.
in the short term, thus, governments need to concentrate power in executives who are ideologically committed to reform, backed by international financial organizations, 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 polarization has received less attention in studies examining how politics can affect economic performance. However, some of the studies that consider polarization stand out. Haggard and Kaufman (1993), for example, contend that polarized party systems impede support for economic adjustment because they make compromises less likely. 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 and Rosenthal, 1995; Fiorina, 1996). Another way in which polarization 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 and Tabellini, 1990; Svensson, 1998). Frye (2002) also shows that political polarization 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 in particular, the literature has concentrated on a range of social, economic and political factors. Nevertheless, political polarization has been largely neglected. 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 (Commander, 2012; Abouleinein et al., 2009; Blatter and Buzzell, 2013). The uncertainty regarding the distribution of gains and losses from reform (Fernandez and Rodrik, 1991) and the lack of information by voters on policies and by governments on voters’ preferences (Besley, 2004) have also been emphasized. 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, one of the obstacles to reform is the expectation that it 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 and 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).

The use of experiments to study reform however has seen some recent attention. Three studies have examined voting over reform in the laboratory: Cason and Mui
(2003, 2005), Fischbacher and Schuddy (2014), and Paetzel et al (2014). Whereas 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. 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. As can be seen, experimental designs – with their added value of control and providing more valid measurement of behavior – have also largely failed to incorporate the intervening variable of political polarization in the study of support for reform.

III. 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. Polarization 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 favoritism and out-group derogation (Brewer and Brown, 1998). Whereas the former refers to the tendency to mentally exaggerate the favorable 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 and 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 other work treats social groups as information cues where the perception that one shares an interest with a group is sufficient to differentiate how people will act (Tajfel, 1972; 1978; Jackson and Sullivan, 1987). More recent work showed group identification can also affect decisions about redistribution in the sense that subjects may deviate from monetary payoff maximization towards tax rate that benefits their group (Klor and Shayo, 2010). Hence, we hypothesize 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 with reform all should benefit.

Note that we argue that the effect of political polarization on reform can be 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 polarizing information. That is, we contend that polarizing 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 politicized, suggests that reform is supported by political parties in power and opposed by those not in power, regardless of which ideological group is power and which is in opposition. 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. Moreover, individuals might think that a government closer to their ideological beliefs implements reforms more faithfully or in a less corrupt way even if the benefits are clear regardless of which ideological group enacts reforms. Whether it is the former or the latter mechanism, there is likely to be a material element in the dynamics of supporting reforms. Hence, we expect polarizing 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 polarizing information when such differential benefits exist. We summarize our predictions below:

**Prediction 1:** (a) Polarizing information will affect voter views and behavior 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 polarizing information on reforms that benefit all when there are differences in these benefits by political party.

**IV. Experimental Design**

We faced a number of issues in designing an experiment that tests our two predictions above. First, we desired 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. Third, we needed to do these things in a sensitive manner in the context of a highly polarized political environment. Below, we explain how we measured ideological preferences, then we discuss the voting game and describe how we combined the two in order to manipulate polarizing information.

**A. Measuring Political Preferences**

The experiment was conducted at Cairo University in early May 2014 over a 12 day period and on two days in November 2014. 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 by Morsi supporters or unrest on campus, well ahead of the May 26-28 presidential election in which the former defense minister Sisi faced the Nasserist candidate Hamdeen Sabahi. In June 2013, Sisi took central stage in deposing the previously elected president Morsi (of the Muslim Brotherhood) after mass uprisings against the incumbent president. 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. Similarly, the sessions conducted in November 2014 were held during a period in which there was much talk of protests and some violence between protestors and police.

Because of this tension, to classify subjects we avoided using questions about partisan affiliation or voting behavior. Instead we created for the purposes of the experiment only three university societies – with different activities of each – that to a great extent match the three political ideologies dominating political life: “Deep State”, “Liberal”, and “Islamic”. For example, one activity of society ‘Z’ (which corresponds to Islamist ideology) is to organize classes to learn reciting the Quran; society ‘Y’ (which leans toward liberalism) organizes student parties and hold talks over controversial novels, and society ‘X’ (deep state/old regime) hosts ‘popular’ cabinet ministers to give talks (see the Supplemental Appendix for the list of activities of each society). 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 Islamic, respectively. A decision to belong to any society, 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 behavior and views of respondents of current events in Egypt. Based on the results of the manipulation check, some activities of the hypothesized societies were amended.\(^5\) We also conducted a similar survey at the end of each session on the last day of the experiment as an \textit{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 Islamic Society (Z). The Supplemental Appendix 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

\(^5\) For example, an activity by the liberal-leaning society to ‘hold a monthly meeting to collect students’ complaints about the educational process and pressuring the university administration and professors to solve them’ was dropped because it turned out to be supported by almost all students and hence did not do a good job in dividing subjects. The same goes for a previously suggested activity by the Islamist-leaning society ‘demanding that the college allocates two prayer rooms inside the faculty; one for males and another for females.’ Again, this activity produced no polarization among students but instead was supported by a huge majority. The same applies to a suggested activity by the deep state society ‘on collaborating with the deans and university security officials to protect the university from those who violate the law.’ All these activities were dropped from the final list of activities based on the pre-experiment survey results.

\(^6\) The exchange rate between an Egyptian pound and the U.S. dollar at this time was 1 USD = 7.0072 EGP.
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

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 successful completion. 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 the Instructions in the Supplemental Appendix).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.

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

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 behavior 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.
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 subsidize activities supported by the society, which provided the most votes in favor of Option B. If two societies tied for the most votes for Option B, the experimenters kept the money. 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 favor 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 should be to vote for reform, Option B. After voting, then subjects completed the assigned task and a short after the experiment survey. Table 1 below summarizes the basic stages in the Experiment.

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9 We report data from 525 subjects in total. Table 2 below summarizes the number of sessions and the numbers of subjects by session and treatment.
10 Hence there was no deception in this part of the experiment..
11 Only two subjects out of 525 across sessions earned less than 24 Egyptian pounds in the first task part of the experiment; over 97% earned 40 Egyptian pounds or more. Hence, even with the fee and Option B having a 10 to 18 pound advantage over Option
Table 1: Sequence of Steps in Experiment

<table>
<thead>
<tr>
<th>Introduction</th>
<th>Pre-experiment instructions to subjects. Explanation of the five parts of the experiment.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Part 1</td>
<td>Survey on society affiliation. Different society affiliations are chosen.</td>
</tr>
<tr>
<td>Part 2</td>
<td>Risk evaluation task (Explained below)</td>
</tr>
<tr>
<td>Part 3</td>
<td>First series of math problems (five minutes to answer 12 simple math problems).</td>
</tr>
<tr>
<td>Part 4</td>
<td>Voting over Options A and B</td>
</tr>
<tr>
<td></td>
<td>Another set of 12 math questions whose pay-offs depend on results of majority vote.</td>
</tr>
<tr>
<td>Part 5</td>
<td>Short post-experiment survey</td>
</tr>
</tbody>
</table>

**B. Manipulating Polarizing Information**

We designed two principal treatments (*Information* and *Baseline*) in order to manipulate the degree to which voters perceived the societies as polarized 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 to avoid A, 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.
deception. 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. Hence, a total of 60 subjects participated in the Information Treatment.

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. Comparing voters’ choices between these two treatments thus allows us to measure the effect of polarizing information. In the next Section we compare their choices in two ways. First, we have their revealed preferences in their voting behavior; their vote choices. Second, at the end of the experiment we asked them to explain their

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12 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.

13 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 the Supplemental Material and the z-tree program is available on request from the authors.
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 provide 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.

We also conducted two additional treatments in order to evaluate the extent that it is the ideologically polarizing nature of the information, which affects voters’ views and choices and not just a group identification effect. In these two treatments, Balanced Information and Balanced Baseline, everything was the same as in the Information and Baseline Treatments except that instead of subjects choosing societies, subjects were arbitrarily assigned a society membership and the three societies’ activities were distributed such that they were balanced ideologically. If the effect of information on previous voting by society is primarily through the ideologically polarizing nature of the information, then we expect that there will be no difference in how subjects view their votes and their voting behavior between the Balanced Information and Balanced Baseline Treatments. If the effect of information on previous voting by society is simply due to group identification and assignment, then we will find similar differences between the two Balanced treatments as to what we find between the two primary treatments. As with the previous treatments, 60 (4 groups) new subjects participated in each of these treatments for a total of 120 (8 groups) new subjects.

The society classifications for these two treatments are in the Supplemental Appendix. We conducted these additional sessions in November 2014.
C. Measuring the Effect of Differential Benefits

Comparing the Information and Baseline Treatments and the two Balanced Treatments addresses the first part of Prediction 1 – whether polarizing information affects voters’ views and choices on reform. To investigate the second part of Prediction 1 – that polarizing 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 polarizing 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.\footnote{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.}

Our Prediction 2 argues that voters are more likely to seek out polarizing 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 polarizing 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. We used a Becker-DeGroot-Marshak (hereafter, BDM) procedure to elicit subjects’ willingness to pay for the information.\footnote{See Becker, et al (1964). See the Supplemental Appendix for Instructions used for this Treatment. 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.} 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. 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.

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 polarizing 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 polarizing information, specifically, Prediction 2. These treatments also allow us to compare the behavior of the subjects who willingly purchased the polarizing 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 polarizing information prior to voting. Hence, comparing informed voter behavior in Information Choice and Information Treatments (and informed voter behavior 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 2 below summarizes our 8 treatments
Table 2: Summary of Treatments in Experiment

<table>
<thead>
<tr>
<th>Treatment Name</th>
<th>Information Provided</th>
<th>Differential Benefits</th>
<th>Ideological Societies</th>
<th>Choice</th>
<th>Sessions (Groups)</th>
<th>Total Subjects</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Primary</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Baseline</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
<td>2 (4)</td>
<td>60</td>
</tr>
<tr>
<td>Information</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
<td>2 (4)</td>
<td>60</td>
</tr>
<tr>
<td><strong>Balanced</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Balanced Baseline</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
<td>2 (4)</td>
<td>60</td>
</tr>
<tr>
<td>Balanced Information</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
<td>2 (4)</td>
<td>60</td>
</tr>
<tr>
<td><strong>No Reward</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Baseline No Reward</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
<td>2.5(^{17}) (5)</td>
<td>75</td>
</tr>
<tr>
<td>Information No Reward</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
<td>3 (6)</td>
<td>90</td>
</tr>
<tr>
<td><strong>Choice</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Information Choice</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>2 (4)</td>
<td>60</td>
</tr>
<tr>
<td>Information Choice No Reward</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
<td>2 (4)</td>
<td>60</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>17.5 (35)</td>
<td>525</td>
</tr>
</tbody>
</table>

\(^{17}\) 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.
D. Control Measures

Although we use random assignment as our principal method to control for individual specific variation, which might affect behavior, we also attempted to control for various individual differences, which we suspected might affect the subjects’ choices and behavior. 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 were Christian or another non-Islamic religion, then he or she may be less likely to choose the Islamic society. Our subjects were largely female (nearly 71%)\textsuperscript{18} 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.\textsuperscript{19} 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.

\textsuperscript{18} At Cario University the vast majority of students in economics and political science are female.
\textsuperscript{19} We thank Chetan Dave for suggesting this version of risk preference measurement.
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 conditions. 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. 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 525 subjects participated only once in the experiment. At the end of each session, subjects were paid in a secure place and the total earnings were on average $15. Each session 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.

V. Results

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

We begin our discussion of the results 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 polarizing 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 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 in the Information Treatment noted: “Because the group I belong to is supporting option A in the stated example [information on previous voting provided].” 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 classified subjects as Political Own Society 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 categorized. 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 1 below. 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 polarizing information clearly structures the ways in which voters describe the two choices.

\[\chi^2 = 10.40, \Pr = 0.015 \text{ and Fisher’s exact test yields } \Pr = 0.012.\]
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 1 above). We find that our results are robust to this restriction; the polarizing 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 then the benefits to all societies (10% among informed compared to 23% in the baseline).\textsuperscript{21}

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

\textsuperscript{21} The Pearson’s $\chi^2$ statistic for the comparison 7.55, Pr = 0.06 and the Fisher’s exact test yields a Pr = 0.04.
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 polarizing 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.

As discussed in the previous section, we also conducted the same two treatments but with non-ideological societies to which subjects were arbitrarily assigned (Balanced Baseline and Balanced Information). We expect that information with non-ideological societies should have no effect on how voters’ view their choices between Options A and B or how they actually vote. Indeed we find that information had no effect on explanations or vote choices in the Balanced Treatments. Hence, we can conclude that it is the ideological polarization that the information provides which leads to the effects observed above.

\textbf{Evaluation of Prediction 1(a): Voting Behavior}

We turn now to examine whether the polarizing information also affects how voters choose. Recall that the polarizing information suggests to voters that Society Z (the Islamic 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 polarizing information affects voter behavior, then we expect that voters in Society Z in the Information Treatment will be more likely to vote for

\textsuperscript{22} The $\chi^2$ statistic for the comparison of explanations in these two treatments = 1.44, Pr = 0.70, and the Fisher’s Exact Test yields a Pr = 0.71. The z statistic for the comparison of the two treatments of voting for Option B from voters given information that their assigned society voted least for Option B previously = 0.73, Pr = 0.44 and for those votes given information that their assigned society voted most for Option B previously = 1.46, Pr = 0.14.
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 2 below summarizes voting behavior in the two treatments by whether a subject chose the Islamic Society or not. We find some evidence supporting our prediction. That is, we find higher support for Option B among Islamic 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-Islamic 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, although using Fisher’s exact 1-sided test they are not significant at conventional levels.\(^{23}\)

\(^{23}\) 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-Islamic Society members the z statistic = 1.91, Pr = 0.03 in a one-tailed test. Fisher’s exact one-sided test for Islamic Society members yields Pr = 0.10 and for non-Islamic Society members Pr = 0.09.
When we restrict our attention just to the subjects who answered all math problems in the first set correctly (shown in Figure 2 as well), we find the same relationships, also weakly significant. Islamic Society members who answered all problems correctly choose Option B 100% of the time when they received polarizing information compared to only 79% of the time when not informed. Non-Islamic Society member who answered all problems correctly chose Option B 91% of the time when they
received polarizing information, but 100% of the time when not informed.24 Thus, we find supportive evidence of an effect on voter choices, although it is weak.

We also estimated a probit analysis of vote choice for Islamic Society members as a function of whether they were informed, how many problems they answered correctly in the first set of problems, whether they were Female, and chose taxi route 1. We find that none of the control variables are significant, but that informed Islamic Society members are 21% more likely to vote for Option B at the 5% level (z statistic = 1.95) than uninformed ones.25

**Evaluation of Prediction 1(b)**

We find that the polarizing information appears to have a large effect on how voters describe their vote choices and a smaller, less significant, effect on how voters choose. 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 3 below. We find significant differences.26 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

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24 For the comparison with Islamic Society members, the $\chi^2$ statistic = 4.48, Pr = 0.03, Fisher’s exact test yields Pr = 0.07 and for the comparison with non-Islamic Society members, the $\chi^2$ statistic = 3.24, Pr = 0.07, Fisher’s exact test yield Pr = 0.11.

25 We could not estimate the same probit for non-Islamic Society members because of insufficient variation in the data.

26 Pearson’s $\chi^2$ statistic for the comparison = 48.4, Pr = 0.00 and Fisher’s exact test yields Pr = 0.00.
own society in explaining their vote (recall these voters have received information about 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 3.\textsuperscript{27}

![Figure 3: Distributions of Voter Explanations in the Information and Information No Reward Treatments](Image)

Note that subjects in the Baseline No Reward Treatment never explained their vote in reference to the societies given that they received no polarizing 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 polarizing

\textsuperscript{27} Pearson’s $\chi^2$ 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 polarizing 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 polarized simply by the existence of a differential reward without polarizing information. Obviously the results suggest an interactive relationship between polarizing information and differential benefits.\textsuperscript{28}

What do we find when we compare voting behavior in these no reward treatments with the reward treatments? Figure 4 compares voting behavior in the no reward treatments with their respective reward treatments. The behavior is broken down by whether a subject is a member of the Islamic 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 behavior by society choice). We find in every comparison the differential benefit increases votes for Option B, although the difference is only mildly significant in the effect of differential benefits for Non-Islamic Society Members in a one-tailed Fisher exact test (Pr = 0.05).\textsuperscript{29} 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-Islamic 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 Islamic Society members who

\textsuperscript{28}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.

\textsuperscript{29}We are 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.
answered all problems in the first set correctly vote for Option B as compared to 89% without differential benefits), although the differences are not significant.

**Figure 4: The Effects of Differential Benefits on Voter Behavior**

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, 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-Islamic voters to react to polarizing information by voting for Option B less often found above.
**Evaluation of Prediction 2**

We now focus on Prediction 2, that voters will be more willing to acquire costly polarizing 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 polarizing 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 5 summarizes 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*). Hence it is clear that significantly many more subjects value the polarizing information when reform has differential rewards.

![Figure 5: Demand Prices in the Choice Treatment](image)

The Pearson’s $\chi^2$ 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.
Our choice treatments also allow us to compare those who selected to receive the polarizing information as compared to those who were given the information without a choice. Figures 6 and 7 present comparisons of explanations and voting behavior, 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 polarizing information and those who were shown the information arbitrarily. The only significant difference we find in voting behavior is some slight evidence that Non-Islamic 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.\textsuperscript{31} However, when we compare Islamic and Non-Islamic Society members who are informed in either information choice treatment, we 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.

\textsuperscript{31}The Pearson’s $\chi^2$ statistic for the comparison = 4.27, Pr = 0.039. A one-sided Fisher’s exact test yields Pr = 0.053.
Figure 6: Distributions of Informed Voter Explanations in the Informed Choice Treatments compared to their No Choice Counterparts

- Information: 3 Non-Political Private, 29 Political Own Society, 23 Political All Societies, 5 Unclear
- Information Choice: 3 Non-Political Private, 4 Political Own Society, 7 Political All Societies, 5 Unclear
- Information No Reward: 6 Non-Political Private, 9 Political Own Society, 81 Political All Societies, 0 Unclear
- Information Choice No Reward: 1 Non-Political Private, 2 Political Own Society, 14 Political All Societies, 0 Unclear
VI. 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 investigated one possible source of the lack of action – polarization on reform on non-relevant ideological grounds. We did so by using a novel approach of a combination of incentivized experiments with naturally occurring political ideological divisions in a polarized setting. We found that polarizing 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. We also demonstrated that the ideological polarized nature of the information is the source of the effect; that is, when
subjects were arbitrarily assigned to balanced ideological groups, the information had no effect on explanations or voting behavior.

However, our evidence suggests that the influence of polarizing 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 favor of reform (such as the party in power who enacts reform), then voters are most likely to see reform through polarized 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.

These results have significant implications for policy making. They imply that it might be quite important to reduce levels of political polarization as a prior step before – or in parallel to – tackling major reform areas. Whereas such a task might be equally difficult as the act of reform itself, it is difficult to imagine a country being able to undergo significant reforms at the same time when its electorate is highly politicized and polarized electorate.

Future research could take our analysis many steps further. An interesting – and logical – second step for example could be to vary the source of the reform policy in question across different treatments. In other words, one could test whether the same reform policy would be accepted if suggested by a politician with close ideological beliefs to the subject’s than if it was proposed by another figure, or by an independent expert. Another experimental design can test the role of media in affecting this polarized assessment of reform policies. How far, for example, would independent media help make subjects’ evaluation of reform policies based on material pay-offs rather than political ideologies.
References:


Supplemental Appendix

Part I: Society Classification activities based on pilot survey result

<table>
<thead>
<tr>
<th>Society Name</th>
<th>Activities</th>
<th>Ideology</th>
</tr>
</thead>
</table>
| **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. | Deep State |
| **Society Y** | - Organizing a singing party every term where a famous (male or female) singer is invited.  
- Organizing a discussion session with a novelist whose latest novel received reservations by the censorship authority, to present his point of view.  
- Organizing the annual ‘prom’ party in a famous hotel where students from all years are allowed. | Liberals |
| **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. | Islamists |
Part 2: 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 and other participants cannot link any of your choices in this experiment to your identity.

This experiment will take place in five Parts (Parts 1, 2, 3, 4, and 5). 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.

After completing the survey and the taxi choice in Part 2, in Part 3 of the experiment, you will complete a series of tasks via the computer. For each successfully completed task, you will receive a payment of ‘4’ pounds. 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: $31 + 15 = ?$ (correct answer is 46). 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:

<table>
<thead>
<tr>
<th>Society Name</th>
<th>Activities</th>
</tr>
</thead>
</table>
| 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   | - Organizing a singing party every term where a famous (male or female) singer is invited.  
- Organizing a discussion session with a novelist whose latest novel received reservations by the censorship authority, to present his point of view.  
- Organizing 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 sayings (*hadith*).  
- Hosting a sheikh to talk about certain topics. |

Q1: Suppose you were asked to join one of the above mentioned student societies, so 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 of the experiment, the taxi choice. Imagine that there are six possible routes that a taxi could take from your home to go 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 price of the taxi depends on whether you face high or low traffic. The table below shows the different taxi routes and the prices for the taxi for the different types of traffic:

<table>
<thead>
<tr>
<th>Routes</th>
<th>Traffic</th>
<th>Cost of Taxi</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Low</td>
<td>5.6</td>
</tr>
<tr>
<td></td>
<td>High</td>
<td>5.6</td>
</tr>
<tr>
<td>2</td>
<td>Low</td>
<td>4.8</td>
</tr>
<tr>
<td></td>
<td>High</td>
<td>7.2</td>
</tr>
<tr>
<td>3</td>
<td>Low</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>High</td>
<td>8.8</td>
</tr>
<tr>
<td>4</td>
<td>Low</td>
<td>3.2</td>
</tr>
<tr>
<td></td>
<td>High</td>
<td>10.4</td>
</tr>
<tr>
<td>5</td>
<td>Low</td>
<td>2.4</td>
</tr>
<tr>
<td></td>
<td>High</td>
<td>12</td>
</tr>
<tr>
<td>6</td>
<td>Low</td>
<td>0.4</td>
</tr>
</tbody>
</table>
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 or 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 15 pounds 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 and then afterwards the subject learn how much they earned.]

Part 3:
We will now begin Part 3 of the experiment, 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.

- \(23 - 19 = \)
- \(2 + 7 = \)
- \(12 - 3 = \)
- \(23 - 16 = \)
- \(44 - 39 = \)
- \(35 - 29 = \)
- \(3 \times 3 = \)
- \(5 + 4 = \)
- \(3 + 6 = \)
- \(3 + 2 = \)
- \(20 - 18 = \)
- \(68 - 59 = \)

In this part of the experiment, you answered “xx” questions correctly. Each correct answer was worth 4 pounds. So, your total earnings in this part are “xxx” pounds.

**Part 4:**

We now turn to Part 4 of the experiment in which you will also answer similar questions as in Part 3. Again you will be given 5 minutes to answer the 12 math questions. However, in Part 4 before working the problems, 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 2 pounds for every correct answer you complete. You can vote for Option B in which you pay a price of 10 pounds before you participate but you are rewarded, as before, 4 pounds for every correct answer you complete. 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 2 pounds for each correct answer. If the majority votes for Option B, then everyone will find their earnings deducted by 10 pounds but will be rewarded 4 pounds for every correct answer.
The 10 pounds that will be deducted from everyone will be added together and spent on activities supported by the Society that has voted the most in favor of Option B IF Option B wins. If two societies tied for the most votes for Option B, the experimenters kept 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 10 pounds 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:

Question 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

Question 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 Option 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. 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.”

[vote choice question] 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.
**Instructions Provided in Choice Treatments:**

Before voting between Options A and B, you have a choice to buy information 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. 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. If you want, you can pay to see how these people voted by their Society Affiliation. [Reminder of the Societies and their descriptions]. The price at which you would pay for the Option is between 1 and 5 Egyptian pounds. It has been predetermined and hidden behind the white sheet on the board that we have not revealed yet. Let’s call that the Market Price. But before revealing the Market Price, please name a price that you would be willing to pay between 1 and 5. Let’s call your price, the Demand Price. If the Market Price is higher than the Demand Price you set, then you will not have to buy the information and you will not receive the information. If the Market Price is equal to or lower than the Demand Price you set, then you will buy the information at the Market Price. If you do not wish to buy the information at all you should set a Demand Price at 0. If you are willing to buy the information at any price up to 5 Egyptian pounds, then you should set a Demand Price of 5.

**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 for your participation, 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.
Part 3: Questionnaire Used to Correlate Political Preferences with Society Membership

(Note – responses averages are reported after each question)

This questionnaire aims at exploring the opinions of a sample of the students of the Faculty of Economics and Political Science concerning a number of public issues. It is carried out in the framework of a scientific research project that is conducted within the university. We hope that you answer the questions objectively (by ticking √ in front of the most appropriate answer from your point of view). All data of this questionnaire are confidential and will not be used except for the purpose of scientific research. No answer will ever be connected to the identity of the respondent.

1. If you are a member in one of the colleges’ student societies, and the following activities are ones that this society can hold, to what extent would support or oppose each of them? Subjects were asked to choose between Strongly Support (coded 1), Support (2), Neutral (3), Oppose (4), Strongly Oppose (5), and Don’t Know for each (coded missing).

   a. Collaborating with the deans and university security officials to protect the university from those who violate the law. Means by Society Choice: Deep State = 1.57, Liberal = 2.52, Islamic = 2.05 (not significantly different)

   b. Organising a singing party every term where a famous (male or female) singer is invited. Means by Society Choice: Deep State = 2.74, Liberal = 1.73, Islamic = 3.03 (significantly different distributions with Pr = 0.00, Fisher exact test)

   c. Forming groups to learn the good recitation of Quran. Means by Society Choice: Deep State = 1.95, Liberal = 1.5, Islamic = 1.19 (significantly different distributions with Pr = 0.00, Fisher exact test)
d. Hosting a popular cabinet minister to give a talk about the political developments in
the country. Means by Society Choice: Deep State = 1.39, Liberal = 1.62, Islamic = 1.73 (not
significantly different)

e. Organising a discussion session with a novelist whose latest novel was considered
culturally controversial. Means by Society Choice: Deep State = 1.52, Liberal = 1.4, Islamic =
1.53 (not significantly different)

f. Producing a wall journal that discusses in each edition the interpretation of some of
Prophet Mohamed’s lessons (hadith). Means by Society Choice: Deep State = 1.82, Liberal =
1.73, Islamic = 1.19, (significantly different distributions with Pr = 0.00, Fisher exact test)

g. Demanding the toughening of sentences for those students who trigger riots inside
(significantly different distributions with Pr = 0.03, Fisher’s exact test)

h. Holding a monthly meeting to collect student’s complaints about the educational
process and pressuring the university administration and professors to solve them. Means by
Society Choice: Deep State = 1.30, Liberal = 1.21, Islamic = 1.24, (not significantly different)

i. Hosting a sheikh to talk about certain topics. Means by Society Choice: Deep State =
2.46, Liberal = 2.03, Islamic = 1.70 (significantly different distributions at Pr = 0.10, Fisher’s
exact test)

j. Rejecting the attempts made by some students to disrespect university professors.
Means by Society Choice: Deep State = 1.39, Liberal = 1.73, Islamic = 1.31 (not significantly
different)

k. Organising a theatrical show at the end of year. Means by Society Choice: Deep
State = 1.48, Liberal = 1.43, Islamic = 1.64 (not significantly different)
1. Demanding that the college allocates two prayer rooms inside the faculty; one for males and another for females. Means by Society Choice: Deep State = 1.5, Liberal = 1.3, Islamic = 1.03 (significantly different distribution with Pr = 0.02, Fisher’s exact test)

2. Please express your opinion in the following political issues:

   a. Do you think that it would be worthwhile to support a leader who could solve the main problems facing Egypt today even if he did not commit to democracy? (Strongly Agree coded as 1, etc. as above). Means by Society Choice: Deep State = 2.62, Liberal = 3.45, Islamic = 3.78 (significantly different distributions with Pr = 0.06, Fisher’s exact test)

   b. Do you think that democracy is a good means to solve social conflicts? (Strongly Agree coded as 1, etc. as above). Means by Society Choice: Deep State = 3.05, Liberal = 2.63, Islamic = 2.31 (not significantly different distributions according to Fisher’s exact test, but Pearson’s $\chi^2 = 14.6$, Pr = 0.07)

   c. In your opinion, what are the limits of religious leaders as far as politics issues are concerned? Possible answers: Should keep out entirely (coded 1), Should speak out only when political issue concerns religious matters (2), should express views on any subject (3), Don’t know (missing). Means by Society Choice: Deep State = 1.61, Liberal = 1.93, Islamic = 1.97 (not significantly different)

   d. What do you think of this statement: It is important for me that political leaders in the country be religious? (Strongly Agree coded as 1, etc. as above). Means by Society Choice: Deep State = 3.09, Liberal = 2.83, Islamic = 2.6 (significantly different distributions with Pr = 0.04, Fisher’s exact test)

   e. Thinking about the January 25th revolution, do you see this step as? Possible answers: Very Positive (coded 1), Positive (2), Neutral (3), Negative (4), Very Negative (5), Don’t Know
Political Polarization and Support for Reform: Evidence from Egypt (missing). Means by Society Choice: Deep State = 1.78, Liberal = 1.59, Islamic = 1.33 (not significantly different)

f. What about the ousting of Mohamed Morsi in July 2013, do you see this step as? (Very Positive coded as 1, as above, etc.). Means by Society Choice: Deep State = 1.45, Liberal = 2.67, Islamic = 2.74 (significantly different distributions with Pr = 0.08, Fisher’s exact test)

g. Do you see Egypt mainly as a .. (tick one only)? (not significantly different)

<table>
<thead>
<tr>
<th>Answers</th>
<th>Deep State Percentage</th>
<th>Liberal Percentage</th>
<th>Islamic Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Muslim country</td>
<td>9%</td>
<td>20%</td>
<td>30%</td>
</tr>
<tr>
<td>Arab country</td>
<td>48%</td>
<td>50%</td>
<td>51%</td>
</tr>
<tr>
<td>A pharaoh country</td>
<td>4%</td>
<td>7%</td>
<td>8%</td>
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<tr>
<td>Mediterranean</td>
<td>13%</td>
<td>10%</td>
<td>8%</td>
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<tr>
<td>African country</td>
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<td>0%</td>
<td>3%</td>
</tr>
<tr>
<td>Other</td>
<td>22%</td>
<td>10%</td>
<td>0%</td>
</tr>
<tr>
<td>Don't know</td>
<td>0%</td>
<td>3%</td>
<td>0%</td>
</tr>
</tbody>
</table>

3. Do you think that the following institutions are trustworthy? (Strongly Agree coded as 1, etc. as above).


c. Government media (like state television and state-run newspapers) – Means by Society Choice: Deep State = 3.77, Liberal = 4.23, Islamic = 4.35 (significantly different distributions with Pr = 0.09, Fisher’s exact test)

d. Non-government media (like satellite channels and private newspapers) – Means by Society Choice: Deep State = 3.52, Liberal = 3.93, Islamic = 4.22 (not significantly different)


f. Police – Means by Society Choice: Deep State = 2.52, Liberal = 3.92, Islamic = 3.8 (significantly different distributions with Pr = 0.00, Fisher’s exact test)

g. Military – Means by Society Choice: Deep State = 1.7, Liberal = 2.6, Islamic = 2.84 (significantly different distributions with Pr = 0.01, Fisher’s exact test)

h. Religious leaders – Means by Society Choice: Deep State = 2.78, Liberal = 2.93, Islamic = 2.78 (not significantly different)

4. What is your opinion regarding the following statements on Egypt today? (Strongly Agree coded as 1, etc. as above).

a. Young people today don't have enough respect for traditional values. Means by Society Choice: Deep State = 2.22, Liberal = 2.67, Islamic = 1.81 (not significantly different)

b. Censorship of films and songs is necessary to uphold moral standards. Means by Society Choice: Deep State = 1.48, Liberal = 1.53, Islamic = 1.05 (significantly different with Pr = 0.02, Fisher’s exact test)
5. Demographics

a. Gender (not significantly different)

<table>
<thead>
<tr>
<th>Answers</th>
<th>Deep State Percentage</th>
<th>Liberal Percentage</th>
<th>Islamic Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>28%</td>
<td>29%</td>
<td>30%</td>
</tr>
<tr>
<td>Female</td>
<td>72%</td>
<td>71%</td>
<td>70%</td>
</tr>
</tbody>
</table>

b. How old are you? Mean ages by Society Choice: Deep State = 20.51, Liberal = 20.51, Islamic = 20.50 (not significantly different)

c. Can you please tell me your religion? (significantly different with Pr = 0.01, Fisher’s exact test)

<table>
<thead>
<tr>
<th>Answers</th>
<th>Deep State Percentage</th>
<th>Liberal Percentage</th>
<th>Islamic Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Muslim</td>
<td>92%</td>
<td>91%</td>
<td>99%</td>
</tr>
<tr>
<td>Christian</td>
<td>8%</td>
<td>7%</td>
<td>1%</td>
</tr>
<tr>
<td>Other</td>
<td>0%</td>
<td>2%</td>
<td>0%</td>
</tr>
</tbody>
</table>

d. Study Year (not significantly different, sums may add up to more than 100% due to rounding)

<table>
<thead>
<tr>
<th>Answers</th>
<th>Deep State Percentage</th>
<th>Liberal Percentage</th>
<th>Islamic Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>First</td>
<td>2%</td>
<td>3%</td>
<td>1%</td>
</tr>
<tr>
<td></td>
<td>15%</td>
<td>17%</td>
<td>19%</td>
</tr>
<tr>
<td>----------------</td>
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<td>-----</td>
</tr>
<tr>
<td>Second</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Third</td>
<td>81%</td>
<td>78%</td>
<td>75%</td>
</tr>
<tr>
<td>Fourth</td>
<td>2%</td>
<td>1%</td>
<td>3%</td>
</tr>
<tr>
<td>Post graduate</td>
<td>0%</td>
<td>1%</td>
<td>1%</td>
</tr>
</tbody>
</table>
Part 4: Societies in the *Balanced Baseline* and *Balanced Information Treatments*

<table>
<thead>
<tr>
<th>Society Name</th>
<th>Activities</th>
</tr>
</thead>
</table>
| **Society X** | - Collaborating with the deans and university security officials to protect the university from those who violate the law.  
- Organizing a singing party every term where a famous singer is invited.  
- Forming groups to learn the good recitation of Quran. |
| **Society Y** | - Demanding the toughening of sentences for those students who trigger riots inside campus.  
- Organizing a theatrical show at the end of year.  
- Producing a wall journal that discusses in each edition the interpretation of some of Prophet Mohamed’s lessons (*hadith*). |
| **Society Z** | - Rejecting the attempts made by some students to disrespect the university president.  
- Organizing the annual ‘prom’ party in a famous hotel where students from all years are allowed.  
- Hosting a sheikh to talk about certain topics. |