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Bribing to Queue-Jump: An experiment on cultural differences in bribing attitudes among Greeks and Germans*

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Abstract: We study the role of culture on bribing attitudes in a new dynamic bribery game, where the purpose of bribing is to receive a service earlier by bribing to queue-jump. Our *queue-jumping game* allows us to distinguish between two classes of bribes: (i) *queue-jumping bribes*, which aim to increase the briber's expected earnings by jumping the queue, and (ii) *counter bribes*, which aim to maintain the briber's expected earnings by upholding the current order in the queue. In a laboratory experiment, comprised of four treatments that differ in the number of Greeks and Germans in each group, we analyze both cross-cultural and inter-cultural differences in bribing attitudes. In our cross-cultural treatments, we find that Greeks tend to bribe more often than Germans, but only in the early periods of the game. As time progresses, the Germans quickly catch-up, bribing as often as the Greeks. However, the observed differences in bribe rates in the early periods of the game are driven by queue-jumping bribes rather than counter-bribes. As the ratio of counter-bribes to queue-jumping bribes is significantly lower among Greeks relative to Germans, bribing to queue-jump is more profitable in the Greek groups. In our inter-cultural treatments, we find that minorities, irrespective of nationality, bribe less, despite there are no prospects for monetary or reputational gains. We interpret this result as evidence of outgroup favoritism by minority groups.

Keywords: Antisocial Behavior, Bribery, Corruption, Cross-Country Experiment, Queue-Jumping, Inter-country Experiment, Social Norms.

JEL Classification Numbers: C73, C91, C92, D62, D73, H49, Z1.

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1 Introduction

Corruption, whether it is undertaken by an individual or an organization, occurs everywhere in the world (albeit in varying degrees among different countries) and significantly impacts various domains of life. For example, one in four citizens worldwide had to pay a bribe in 2016 (Transparency International, 2017), while businesses and individuals pay more than $1 trillion in bribes every year (Rose-Ackerman, 2004). Corruption has been found to reduce economic growth (Mauro, 1995; Méon and Sekkat, 2005; Grundler and Potrafke, 2019), to increase income inequality and poverty (Gupta et al., 2002), to undermine meritocracy (Del Monte and Papagni, 2001), to hinder SMEs access to financing (Ullah, 2020), to decrease voter turnout (Dahlberg and Solevid, 2016) as well as to lower life expectancy, and inflict higher mortality rates for mothers and children (Holmberg and Rothstein, 2011; Li et al., 2018; Dincer and Teoman, 2019; Achim et al., 2020).

Many organizations have attempted to survey why civilians engage in bribing. The most commonly cited reason as to why civilians decide to participate in bribing is to "speed things up" (Transparency International, 2013). Similarly, when businessmen are pressed to answer why they engage in corruption, they often respond "because everyone else is doing it" (OECD, 2018). Furthermore, in countries with very high levels of corruption and poorly funded administrations, many consider that "there is no other way to obtain a service" than bribing (Integrity Watch, 2016). The three aforementioned responses may be viewed as distinctively different motivations or, by some more sceptical, as merely excuses aimed to justify one's actions. However, when access to public services is provided by public administrations sequentially (as it is the case for example for, construction permits, health and safety inspections and most documentation provided by public administrations), these three motivations, as we show below, are inextricably intertwined.

The key motivation behind this article is the observation that when civilians apply for a permit to a public administration, their applications are added in a queue, where each is reviewed based on the order they were submitted. If no bribing takes place, this process is efficient (as there is no need for sorting) and, arguably, fair. However, if corruption is systemic and the majority of the population bribes to move their application forward in the queue, the fair-minded minority may face severe delays until their application is reviewed, and in extreme cases, is at risk of being stuck perpetually at the end of the queue. Such stories are very common in the local media of countries with high rates of corruption, like Greece, but occasionally they also attract the attention of international outlets.[1]

The importance of queues in processes has been a key area of interest in operations research (e.g. Loch and Wu, 2007; Shunko et al., 2018), engineering (e.g. Dshalalow, 1997), finance (e.g. Inoue and Sazuka, 2010; Bo et al., 2011), consumer behavior (e.g. Zhou and Soman, 2008), psychology (e.g.

[1]For instance, Daley (2012) reports for the New York Times the story of a Greek entrepreneur stuck between red tape and his objection to pay a "speed bribe" leading to a 10 month wait until he finally obtained relevant permits to start his e-business. Similarly, Hope (2016) describes for the Financial Times, how a UK investor had to wait *for 25 years* until they were granted with the relevant work permits to start the construction of a tourist resort in the island of Crete.

Milgram et al., 1986; Schmitt et al., 1992), healthcare (e.g. Green, 2006; Peter and Sivasamy, 2019), and traffic management, be it on the street (e.g. Heidemann, 2001) or in the cloud (e.g. Vilaplana et al., 2014). In economics, despite some notable exceptions (Stiglitz, 1992; Chen et al., 2007; Stein et al., 2007; Dold and Khadjavi, 2017), the role of queues has been largely neglected, especially in relation to how they might be instrumental in institutional corruption. Two key implications stem from the queuing process in the provision of public services. First, that if corruption is systemic, public officials do not need to harass the civilians to instigate a bribe, as the harassment is caused in the form of a negative externality by the other civilians who bribe to jump the queue. Second, it generates two different motivations or classes of bribes: (i) *queue-jumping bribes*, which aim to increase the briber's expected earnings by jumping the queue, and (ii) *counter-bribes*, which aim to maintain the briber's expected earnings by upholding current order in the queue. Although for the briber both bribes are profit maximising, arguably the latter carries a much lower moral cost. Thus, counter-bribes could explain how even fair-minded individuals may feel justified in engaging in bribing, or why some may proactively bribe to ensure access to public services which they deem instrumental to their livelihood (Sweeney et al., 2013). In this article, we introduce a new bribery game, henceforth the *queue-jumping game*, aimed to capture the impact of this sequentiality in administration processes in bribing behavior and evaluate whether these two different types of bribes could, in part, explain the puzzling results on the relationship between bribing attitudes and culture (see Abbink and Serra, 2012; Banuri and Eckel, 2012).

Traditionally, corruption in economics has been considered as a straightforward profit maximization problem where civilians and public officials weigh the benefits from engaging in bribing to the risk of getting caught (Becker and Stigler, 1974; Rose-Ackerman, 1975). Since the seminal study of Abbink et al. (2002), a growing experimental literature has utilized the unique advantage of laboratory studies to (i) directly observe corrupt behavior, (ii) isolate and manipulate institutional frameworks and hence (iii) test anti-corruption policies, both within and between different populations (Banuri and Eckel, 2015). A key result that stems from the experimental literature is that civilians are not concerned solely with their self-interest. Instead, many individuals even when it would be profit-maximizing to do so, prefer to abstain from corruption (e.g. van Veldhuizen, 2013; Abbink et al., 2014; Banerjee, 2016a,b; Abbink and Wu, 2017; Abbink et al., 2018; Ryvkin and Serra, 2020). Allowing for other-regarding preferences (e.g. Andreoni, 1990; Fehr and Schmidt, 1999; Krupka and Weber, 2013; Kőszegi and Rabin, 2007; Bicchieri et al., 2020) has helped explain some of the observed discrepancies in behavior by appreciating that, at least for some people, the decision to bribe also depends on their perception of its appropriateness or the welfare implications of bribing towards the rest of the population. Yet, why corruption varies so strongly across nations, has remained a puzzling question. Several studies have attempted to test whether cultural differences could explain the observed heterogeneity either through cross-country experiments (Alatas et al., 2009; Cameron et al., 2009; Banuri and Eckel, 2015; Frank et al., 2015; Jiang et al., 2015; Gaggero et al., 2018) or with international student samples (Barr and Serra, 2010; Salmon and

Serra, 2017). Even though lab experiments provide the opportunity for researchers to isolate the impact of cultural differences by keeping institutional environments constant, the results from these studies have been somewhat mixed.[2]

Moreover, the influence of ethnic diversity on a country's public good provision and economic performance is at the center of public policy discussions on immigration. In the last 10 years, many have questioned the value of ethnically diverse populations, despite the fact that a number of studies highlight the positive impact that migration has on economic growth (e.g., Ortega and Peri, 2014; Boubtane et al., 2016; Borjas, 2019). For example, in the case of the UK, a stricter migration policy was a central argument of the pro-BREXIT campaigners, who fear-mongered the British population with posters of long lines of Syrian refugees waiting to enter to the UK, if the British citizens voted to remain in the EU. The extent to which, and the rate by which, ethnic minorities assimilate the cultural norms of a country are central to these discussions (Hooghe et al., 2009; Schmid et al., 2014). However, in empirical studies, identifying the direction and causality of (potential) spillover effects can be extremely arduous. Intercultural corruption experiments can provide important insights both on the potential impact of an influx of ethnically diverse minority to the cultural norms of a host country and how anti-corruption policies could be affected by cultural diversity. To the best of our knowledge, the studies of Barr and Serra (2010) and Salmon and Serra (2017) are the only ones we are aware off that attempt to analyze how intercultural interactions influence bribing attitudes, or how cultural diversity could impact anti-corruption policy. Barr and Serra (2010) find that country of origin is strongly correlated with a students' propensity to bribe in the first year of university, but the observed differences disappear by the time they graduate, which is an important result for migration policy. Moreover, Salmon and Serra (2017) observe that informal behavioral policies such as social judgment are much more likely to reduce corruption among individuals who identify culturally with countries characterized by low levels of corruption.

To examine whether differences in bribing attitudes across countries could be explained by sequentiality in public service provision, we conducted two (cross-country) treatments in Athens, Greece and Nuremberg, Germany. According to the 2019 Corruption Perception Index (Transparency International, 2020), Germany is ranked as the 9$^{\text{th}}$ least corrupt country globally, while Greece is ranked 60$^{\text{th}}$. This large gap in corruption levels between the two countries would suggest that if differences in corruption are to be attributed to culture, we should observe that Greek participants queue-jump and counter-bribe relatively more often than the German participants, *ceteris*

[2]For instance, Cameron et al. (2009) conducted a cross-country bribery experiment in Australia, Singapore, India and Indonesia. The first two countries are consistently ranked among the countries with the lowest corruption levels worldwide whereas the last two are consistently ranked among the countries with the highest corruption levels. Indians were most likely to bribe and less likely to punish than Australians, Indonesians and Singaporeans. Yet, Indians and Singaporeans were equally likely to accept bribes and were significantly more likely than Australians and Indonesians to accept one. Similarly, Banuri and Eckel (2015) conducted a cross-country bribery experiment in Pakistan and the United States. In contrast to a cultural explanation to bribery attitudes, they found no significant differences in bribing behavior between Pakistan and the US. However, when punishment is introduced, its efficacy in curbing corruption is significant higher in the US than in Pakistan.

paribus. Furthermore, this difference should be symmetric, (i.e., that both counter-bribes and queue jumping bribes would be at the same level among Greek participants) in line with game-theoretic predictions. However, we hypothesize that it is possible that because the Greek participants have experienced much higher levels of institutional corruption, relatively to their German counterparts, they would counter-bribe more often, resulting to an asymmetric effect between the two treatments.

Furthermore, to examine how intercultural interactions influence bribing attitudes we conducted two additional treatments, where one of the three civilians in our queue-jumping game is Greek (German) while the remaining members and the public official are Germans (Greek). In both treatments, every participant is aware of the group composition, but only the minority can identify itself. This feature of our design allows us to control for reputational gains and social image concerns (Benabou and Tirole, 2006). Consequently, we are able to analyze the bribing attitudes of minorities from countries with lower (higher) levels of reported corruption. In order to be able to allow interaction of subjects from Greece and Germany, the experiment was conducted simultaneously at the Laboratory for Experimental Research Nuremberg (LERN) in Germany and the Laboratory of Behavioral and Experimental Economics Science in Athens, Greece (LaBEES-Athens), and involved a total of 604 participants.

In our cross-cultural treatments, we find that Greeks tend to bribe more often than Germans, but only in the early periods of the game. At the first of the twenty-four periods of our experiment, the Greek groups are 27% more likely to engage in bribing relative to the German groups. However, by the tenth period, the Germans quickly catch-up, and all differences between Greek and German groups disappear. This result, taken literally, would be particularly positive news for policymakers as it would suggest that, at least in the medium to long-term, financial incentives rather than culture is what drives bribing attitudes. However, despite that the Greek authors of this article expected that the differences in overall bribe rates are going to be driven primarily from counter-bribes, we find the opposite effect. According to our results, the differences in bribing rates are driven by queue-jumping bribes. An important implication of this observation is that as the ratio of counter-bribes to queue-jumping bribes is significantly lower among Greeks relative to Germans, bribing to queue-jump is more profitable in Greek groups, which in turn could explain short-term differences in bribing rates among countries with similar institutions.

In our inter-cultural treatments, surprisingly, we find that minorities, irrespective of their nationality, bribe less, despite that there are no prospects for monetary or reputational gains. This result could not be explained by cultural differences nor differences in beliefs, as both would predict that minorities would bribe more rather than less often. Consequently, by induction, we conclude that minorities tend to behave more prosocially. This interpretation, although novel in the context of bribery, is in line with a large body of research in psychology on outgroup favoritism by minority groups (e.g., Hinkle and Brown, 1990; Jost and Burgess, 2000; Hewstone et al., 2002) as well as the findings of Tsutsui and Zizzo (2014) on the prosociality of minority groups.

The remainder of this paper is structured in the following manner: Section 2 introduces the experimental design, procedures and presents the research hypotheses, Section 3 reports the experimental results, and Section 4 discusses our findings and concludes the article.

2 Experimental Design

We start this section with presenting the queue-jumping game (Section 2.1). Afterwards, we explain our treatments and research hypotheses (Section 2.2). Finally, we discuss the experimental procedures and the methodological decisions that pertain our design (Section 2.3).

2.1 The Queue-Jumping Game

Our queue-jumping game consists of four players: one public official (P) and three civilians, $C_i = \{C_1, C_2, C_3\}$. The game is played for a finite number of periods, where $t \in \{1, 2, \ldots, 24\}$, and the total number of periods is common knowledge. We denote the order by which civilians are queued to receive a public service with $q = \{1, 2, 3\}$. A civilian receives $w = 100$, in period t, if she is first in the queue and nothing otherwise.

In the absence of bribing, the public official serves the civilians on a first-come, first-served basis, earning herself/himself in each period a fixed salary $f = 35$. The civilians who in period t are second and third in the queue, in period $t+1$ are advanced to first and second in queue, respectively. Meanwhile, the civilian who was first in queue re-joins it at the back of the line. In queuing theory terminology, this feature of our game implies that in our experiment, arrival rates equal service times at all periods. Furthermore, as there is only one public official serving the civilians, the number of civilians waiting in queue, L_q, is constant with $L_q = \sum_i C_i - 1 = 2 \ \forall \ t$.

When a civilian is third in the queue in period t, she can choose to pay a bribe $b = 20$ to the public official in order to be first in queue in the next period. In line with the past literature, the bribe, b, entails an administrative cost $c = 5$, capturing the social welfare loss of corruption. We refer to bribes offered by civilians who are third in the queue as *queue-jumping bribes*. For a civilian who is second in line, it is rational to bribe only if he/she anticipates that the civilian who is second in the queue would bribe to queue-jump. Hence, we refer to bribes offered by civilians when they are second in the queue as *counter-bribes*. When both civilians bribe at the same period, the public official receives both bribes and one of the two civilians is randomly selected to be first in line in the next period. Let $s_{i,t}$ be the index of actions C_i may take at period t, if $q \neq 1 \rightarrow s_i \in \{0, b\}$ and if $q = 1 \rightarrow s_i \in \{\varnothing\}$. A C_i's payoff in the first period is then given by:

$$\pi_{i,t=1} = \begin{cases} w, & q_{i,1} = 1, \ s_i = 0 \\ 0, & q_{i,1} \neq 1, \ s_i = 0 \\ -b, & q_{i,1} \neq 1, \ s_i = b \end{cases} \tag{1}$$

As $q_{i,t}$ is a function of $q_{i,t-1}$ and the civilians bribing decisions, we can write $q_{i,t}$ as a stepwise function in the following manner:

$$q_{i,t} = \begin{cases} 3, & q_{i,t-1} = 1 \\ 2, & q_{i,t-1} = 3,\ s_{i,t-1} = 0,\ s_{-i,t-1} = 0 \\ 1, & q_{i,t-1} = 2,\ s_{i,t-1} = 0,\ s_{-i,t-1} = 0 \\ 1, & q_{i,t-1} \neq 1,\ s_{i,t-1} = b,\ s_{-i,t-1} = 0 \\ 2, & q_{i,t-1} \neq 1,\ s_{i,t-1} = 0,\ s_{-i,t-1} = b \\ 1, & p \leq 0.5,\ q_{i,t-1} \neq 1,\ s_{i,t-1} = b,\ s_{-i,t-1} = b \\ 2, & p > 0.5,\ q_{i,t-1} \neq 1,\ s_{i,t-1} = b,\ s_{-i,t-1} = b \end{cases} \tag{2}$$

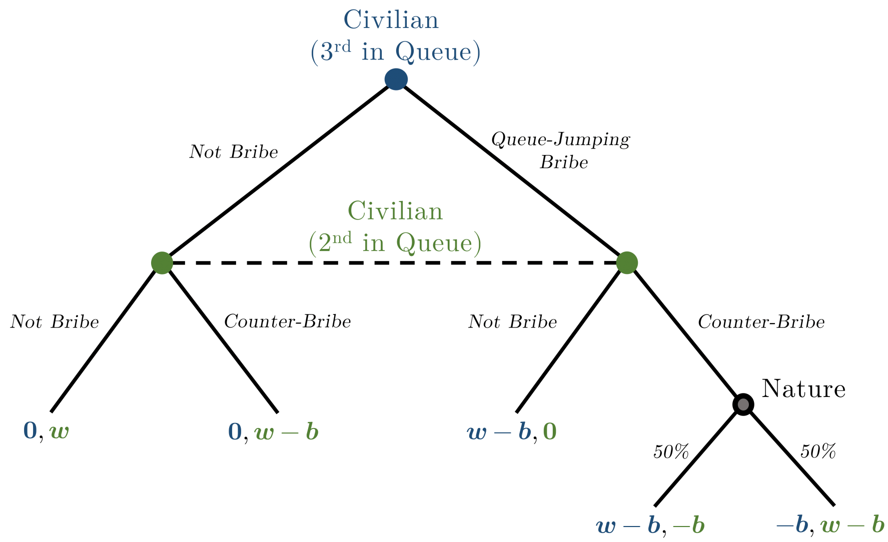
In the first three cases, the order is determined solely by the ordering process, whereas in the fourth and fifth cases the order is determined by the bribing decision. In the sixth case, where both civilians choose to bribe, the probability, p, to be first in the queue, is given by $p = 1/L_q = 0.5$. Thus, if both civilians bribe there is a 50% chance that C_i is going to be first in queue and a 50% chance to be second in queue.

To simplify exposition, consider bribing in period $t-1$ as part of a civilians payoff in period t. Consequently, from Equations 1 and 2, we can write the payoff function of C_i when second or third in the queue in period t as:

$$\pi_{i,t} = \begin{cases} w_t, & q_{i,t-1} = 2,\ s_{i,t} = 0,\ s_{-i,t} = 0 \\ 0, & q_{i,t-1} = 3,\ s_{i,t} = 0,\ s_{-i,t} = 0 \\ w_t - b_{t-1}, & q_{i,t-1} = 2,\ s_{i,t} = b,\ s_{-i,t} = 0 \\ w_t - b_{t-1}, & q_{i,t-1} = 3,\ s_{i,t} = b,\ s_{-i,t} = 0 \\ (1/L_q)w_t - b_{t-1}, & q_{i,t-1} \neq 1,\ s_{i,t} = b,\ s_{-i,t} = b \end{cases} \tag{3}$$

We can then represent the decision problem of the two civilians waiting in line as a stage game at period t, as in Figure 1. By backward induction, we can infer that a self-interested civilian's strategy s_i, when there are not first in queue is to bribe, if $0.5w - b > 0$; which is always true with our parameterization.

Figure 1: Stage game at period t



Notes: In our experiment, $w = 100$, and $b = 20$. Thus, the Nash equilibrium is for both players to always bribe.

Given the stage game has a unique Nash equilibrium, then by backward induction the repeated game has a unique subgame perfect Nash equilibrium where every civilian plays the Nash equilibrium of the stage game, i.e., always bribe when not first in line. Notice that from a game-theoretic perspective, if the civilians are solely interested with a payoff maximization, queue-jumping and counter-bribes differ from each other only in name.

Table 1: Examples of expected profits (in ECUs)

	Those who bribe	Those who do not bribe	Public Official	Administrative costs
Example 1: None of the players attempt to queue-jump	-	800 *(3 players)*	840	0
Example 2: One of the players always attempts to queue-jump	960 *(1 player)*	600 *(2 players)*	1020	60
Example 3: Two of the players always attempt to queue-jump	960 *(2 players)*	0 *(1 player)*	1185	115
Example 4: All the players attempt to queue-jump	493[†] *(3 players)*	-	1530	230

Notes: † expected value after 24 periods.

Furthermore, Table 1 provides illustrative examples of expected total profits in Experimental

Currency Units (ECU) for each player given the parameterization in our experiment. If none of the civilians bribe (Example 1 in Table 1), then each civilian is expected to be first in line eight times, thus earning a payoff of 800 ECU, while the public official earns 840 ECU. If one of the civilians always bribes while the the remaining two civilians abstain from bribing (Example 2 in Table 1), then the civilian who always bribes would earn 960 ECU while the remaining civilians would earn 600 ECU. In this case, the public official would earn an additional 180 ECU in bribes while the social welfare loss would amount to 60 ECU. Similarly, if two civilians always bribe, while one civilian never bribes (Example 3 in Table 1), those who always bribe would earn 960 ECU, whereas, the civilian who never bribes would earn nothing. As a result of the increase in bribes, the public official would earn 1185 ECU while the administrative costs would increase to 115 ECU. Finally, if, in line with game theoretic predictions, all civilians bribe in every period (Example 4 in Table 1), on average, each participant would earn 493 ECU, the public official would earn 1530 ECU, and the administrative costs would amount to a total of 230 ECU. Note, that part of our motivation behind our parameterization is that if civilians exhibit outcome-driven other-regarding preferences such as inequality aversion (Fehr and Schmidt, 1999) or maximin preferences (Charness and Rabin, 2002), then they should abstain from bribing.

2.2 Treatments and Hypotheses

Table 2 summarizes our experimental treatments. We used a 2 × 2 factorial design where we varied the country of origin of the participants between Greece and Germany and the group composition between monocultural and multicultural groups. Specifically, in the Greeks-only and Germans-only treatments all group members were from Germany and Greece, while in the Greeks-majority and Germans-majority treatments, one of the three civilians in the group was of German and Greek nationality respectively.

Table 2: Experimental Design

		Nationality	
		Greek	*German*
Group Composition	*Monocultural*	Greeks-only	Germans-only
	Multicultural	Greeks-majority	Germans-majority

Following the literature on culture, and the results on corruption levels by Transparency International (2017, 2020), our first hypothesis is that on average bribe rates in our experiment would be higher in the Greeks-only relative to the Germans-only treatment.

Hypothesis 1 *Given the corruption rates is higher in Greece than in Germany, aggregate bribe rates will be higher in the Greeks-only treatment relative to the Germans-only treatment.*

Our second hypothesis, in contrast to game-theoretic predictions, is that Greek participants would counter-bribe more often than German participants, in response to higher expectations of bribing relative to the Germans.

Hypothesis 2 *The aggregate differences in bribe rates between Greek and German groups would be explained by differences in counter-bribes rather than queue-jumping bribes.*

In multicultural groups, we expect that bribe rates would be higher on average, as a result of the decreased social cohesion (Friedkin, 2004) and increased distrust across participants of different nationalities (Bornhorst et al., 2010; Dieckmann et al., 2016).

Hypothesis 3 *Aggregate bribe rates will be higher in the multicultural groups relative to monocultural groups.*

2.3 Procedures

To control for house money effects (Ackert et al., 2006) and to add an element of realism to the experiment, when a civilian was first in line they had to complete a real effort task. The real effort task, adopted from Abeler et al. (2011), involved counting the number of zeros shown in a 4×4 matrix. We chose to use a real effort task as we thought it adds realism, but we ensured that is sufficiently simple enough so that all subjects can complete it successfully. In the two practice rounds prior to the main experiment, participants were given the chance to try out the task and thereby familiarize themselves with it. In fact, 99.7% of all subjects solved the zero counting task successfully at the first practice period and 96.7% in both periods.

Furthermore, public officials in our design played a passive role, accepting all bribes. Their sole responsibility was to confirm the correct completion of the real effort task by the civilian in each round. This feature of our design controls for potential heterogeneity in the behavior of public officials allowing us to focus on the behavior of civilians. Importantly it simplified civilians decisions as they only had to consider whether the other civilian will choose to pay to jump the queue, rather than whether their bribe offer would be accepted.

Finally, in contrast to past literature, we did not include a probability of getting caught from engaging in bribing behaviour. Though it is often the norm to include a punishment probability, many other studies do not always incorporate this feature in their experimental designs (e.g. Frank and Schulze, 2000; Banerjee, 2016b; Azfar and Nelson, 2007). Traditionally they idea of including a probability of getting caught has been motivated from an interest in analysing how people would respond to a change in the risk of getting caught and in drawing treatment comparisons with other anti-corruption policies (e.g. Abbink et al., 2002; Banuri and Eckel, 2015). As the focus of our study has been on the tension between bribing to queue-jump and bribing to maintain the current position in the queue, not including a risk of getting caught does not influence our ability to assess our research hypotheses.

All sessions were conducted simultaneously in laboratories in Germany and Greece (the Laboratory for Experimental Research Nuremberg/LERN and the Laboratory for Behavioral and Experimental Economics Science/LaBEES-Athens). We opted for conducting all treatments simultaneously, in order to ensure that the only difference between the monocultural and multicultural treatments is group composition, thus to control for the necessity of conducting sessions simultaneously in the two labs in the multicultural treatments. Before each session started, all subjects were notified that they will be interacting with subjects from another lab, and via a projector we showed the two labs to participants through a conference call that lasted approximately for 20 seconds. In the multicultural groups, the civilian who was the minority was aware that the rest of the group contained members of the other nationality but no one in the group could identify them, thus controlling for social image and reputation effects.

Instructions were written originally in English and translated to Greek and German by a professional translator. In addition, two native speakers translated the instructions back to English (Brislin, 1970). Subsequently, all passages that differed between the three English versions were adjusted and the respective adjustments were accommodated in the German and Greek instructions. At the start of each sessions the instructions were read aloud in the respective language by two of the authors (one in Athens and one in Nuremberg) who also served as the experimenters.

Afterwards, subjects went through a set of control questions. After all subjects completed the control questions, the experimenters asked the participants if they have any questions. Questions were taken privately and answered publicly by the experimenters. Finally, subjects participated in two practice periods, in which they became familiar with the real effort task.

A total of 604 subjects participated in our experiment, of which 64.3% (61.8%) were female in Germany (Greece). The average age was 22.62 years old (S.D. = 3.19) in Germany and 19.95 years old (S.D. = 2.16) in Greece. All sessions were conducted using the experimental software z-Tree (Fischbacher, 2007) and coordinated via the organizational software ORSEE (Greiner, 2015). Decisions were taken in private in cubicles and communication among participants was prohibited. Each session lasted approximately 120 minutes.[3] The experimental currency was converted into Euro at an exchange rate of 1 ECU = €0.02 and paid out in cash at the end of the experiment. Participants earned €23.30 on average (S.D. = 4.97), including a show-up fee of €4.

3 Results

3.1 Descriptive Statistics

Table 3 summarizes the bribe rates across treatments, and position in the queue. Overall, subjects select to bribe 65.9% of the times. When comparing aggregate bribe rates for both types of bribes and all periods the differences between Greeks (67.6%) and Germans (64%) are negligible. Aggregate counter-bribe rates are also rather similar at 62.6% for Greek participants and 61.5% for

[3]Over the past years a common concern with laboratory experiments has been the extent to which experimental findings involving volunteered university students are generalizable to representative samples (Levitt and List, 2007). Concerns about the representativeness of student samples can be separated into two potential effects: (i) student bias, which exists if students behave differently than the general population, after controlling for socio-demographics, and (ii) volunteer bias, which exists if participants who self-select to voluntarily participate in laboratory experiments behave systematically different from non-volunteers. With regards to student bias, there are a number of studies which find that students tend to behave more selfishly than non-students (e.g. Exadaktylos et al., 2013; Falk et al., 2013; Cappelen et al., 2015; Belot et al., 2015). However, such differences are rather small in the majority of cases (e.g. Exadaktylos et al., 2013; Falk et al., 2013; Snowberg and Yariv, 2018; Frigau et al., 2019), disappear when one controls for socioeconomic characteristics (e.g. Carpenter et al., 2008), and always follow the same behavioral patterns. In relation to volunteering bias, a number of studies report no statistically significant differences between volunteers and non-volunteers (Falk et al., 2013; Bellemare et al., 2008; Anderson et al., 2013). Nevertheless, in interpreting our results, one should be cautious in drawing generalizable inferences and keep in mind that university students tend on average to behave more selfishly relative to representative samples.

German participants. However, in queue-jumping bribes, the difference increases to 72.8$ for the Greek participants and 66.5% for German participants. The difference on queue-jumping bribes widens when we compare the Greek-only treatment (74%) with the German-only treatment (62.4%). Another insight we gain from Table 3 is that as we move from a Germans-only monocultural group to groups with more Greeks, mean bribe rates increase. This is consistent irrespective of whether we pool over all types of bribes or whether we just look at counter-bribes or queue-jumping bribes.

Table 3: Bribe rates (in %) across treatments, subject pools and position in queue

		All bribes			**Counter bribes (2nd place in queue)**		**Queue-jumping bribes (3rd place in queue)**	
Treatment	N of subjects	Greeks & Germans	Greeks	Germans	Greeks	Germans	Greeks	Germans
Germans-only	0 Greeks - 3 Germans	61.6	-	61.6	-	60.8	-	62.4
Germans-majority	1 Greek - 2 Germans	64.0	60.7	65.8	58.3	60.7	63.8	70.3
Greeks-majority	2 Greeks - 1 German	69.6	70.6	67.6	65.9	64.6	75.0	70.9
Greeks-only	3 Greeks - 0 Germans	68.1	68.1	-	62.2	-	74.0	-
	All treatments	65.9	67.6	64.0	62.6	61.5	72.8	66.5

Similar insights can be gained by examining Figures 2 to 4 which show bribe rates by groups and periods. A common observation in all figures is that as time progresses bribe rates increase, with the exception of the last round in which we observe an end-game effect. Figure 2 shows that the difference in bribe rates is more pronounced between the Greeks-only and the Germans-only groups but only for the early periods. When we graph bribe rates separately for counter-bribes and queue-jumping bribes, in Figure 3 and Figure 4 respectively, we observe that the difference between groups shown in Figure 2 is mainly influenced by queue-jumping bribes and not counter-bribes. As shown in Figure 3, counter-bribe rates practically overlap across all periods.

Figure 2: Bribe rates by period and group (all bribes)

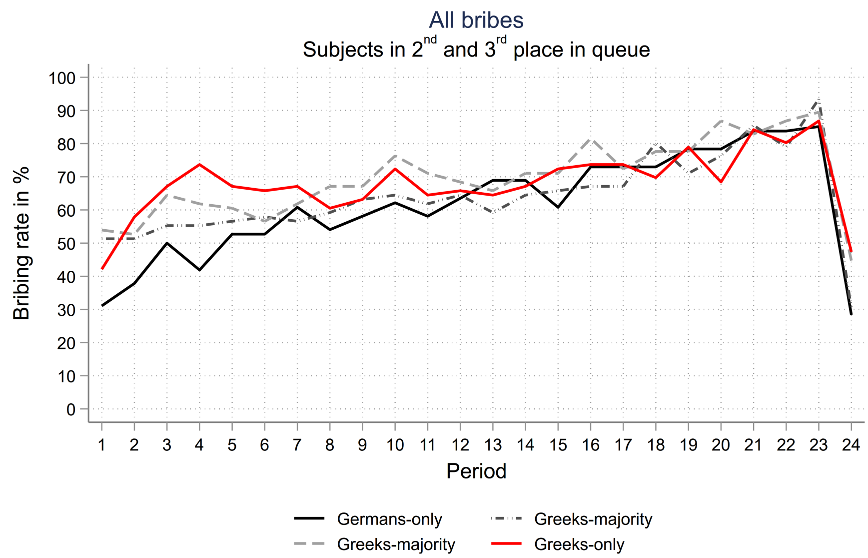


Figure 3: Counter bribe rates by period and group

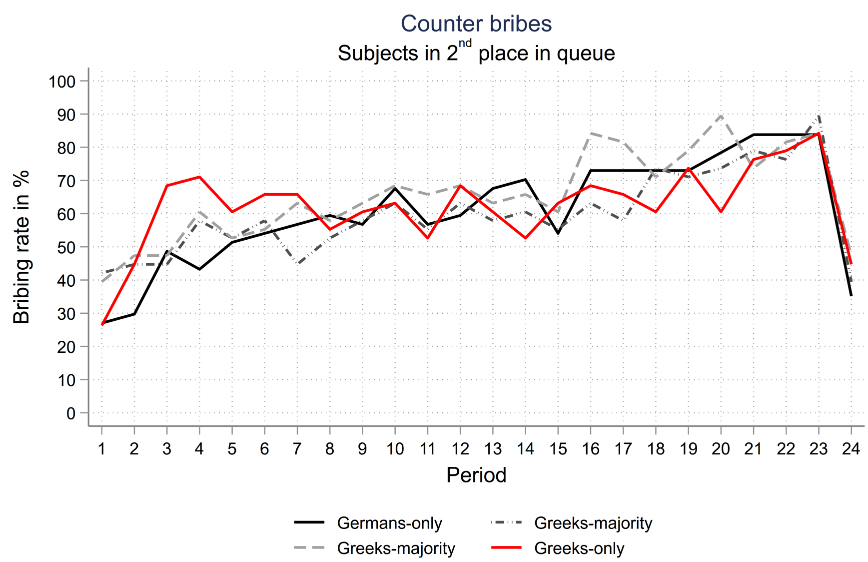
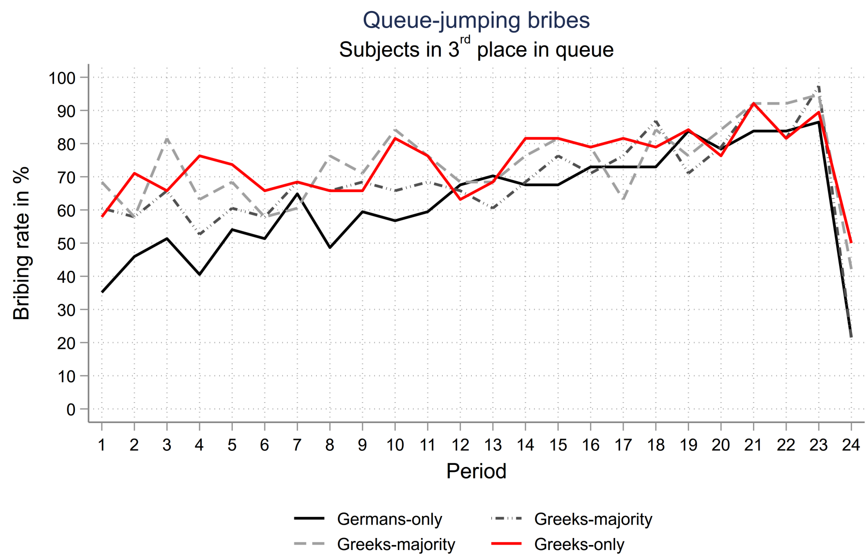


Figure 4: Queue-jumping bribe rates by period and group



In addition to such descriptive statistics, we classified subjects according to the strategies they might have used. We excluded the last period of the game because of end-game effects and find that only a small portion of subjects (43 subjects) followed the Nash equilibrium strategy of always bribing. In addition, subjects playing the Nash equilibrium are roughly equally split between groups: 13 subjects in the Germans-only group, 11 subjects in the Greeks-only group, 9 subjects in the Germans-majority and 10 subjects in the Greeks-majority group. We also find that 3 subjects play the grim trigger strategy (i.e., not bribing initially but bribing thereafter as soon as they are queue-jumped) but none plays a tit-for-tat strategy. Moreover, 14 subjects never bribed at any occasion and 5 subjects never bribed to queue-jump (although they counter-bribed in other occasions).

Given the binary nature of the variable of interest (pay to bypass the queue or not), the observed differences of bribe rates between the four different groups can also be tested statistically with a χ^2 test. Table 4 shows the results of a χ^2 test by period and bribe type.[4] There are two results

[4]Another approach usually taken in the experimental economics literature is to calculate the mean over all rounds and then perform statistical analysis on the means of the data. Harrison (2007) explains the pitfalls of undertaking analysis on *statistics* of the observations (as opposed on the actual observations) and the problems derived from the use of inappropriate metrics of evaluation. Harrison (2007) then shows that undertaking analysis over the units of observations produces entirely opposite results than those presented in Clark (2002) which performed statistical analysis over averages. Having said that, any analysis of only

Table 4: Chi-square tests by bribe type and period

	All bribes		**Counter bribes (2nd place in queue)**		**Queue-jumping bribes (3rd place in queue)**	
	χ^2	p-value	χ^2	p-value	χ^2	p-value
P1	9.734	0.021**	3.429	0.330	9.263	0.026**
P2	6.536	0.088*	2.971	0.396	4.869	0.182
P3	5.925	0.115	5.398	0.145	7.671	0.053*
P4	16.272	0.001***	6.071	0.108	10.743	0.013**
P5	3.533	0.317	0.809	0.847	3.664	0.300
P6	2.804	0.423	1.298	0.730	1.616	0.656
P7	1.805	0.614	4.110	0.250	0.710	0.871
P8	2.715	0.438	0.414	0.937	6.407	0.093*
P9	1.309	0.727	0.383	0.944	1.238	0.744
P10	4.638	0.200	0.398	0.941	9.568	0.023**
P11	2.912	0.405	1.524	0.677	3.457	0.326
P12	0.454	0.929	0.945	0.815	0.275	0.965
P13	1.616	0.656	0.813	0.846	0.966	0.809
P14	0.813	0.846	2.759	0.430	2.601	0.457
P15	2.871	0.412	0.865	0.834	2.751	0.432
P16	4.171	0.244	4.559	0.207	1.022	0.796
P17	1.006	0.800	5.491	0.139	3.521	0.318
P18	2.696	0.441	2.012	0.570	2.724	0.436
P19	1.707	0.635	0.678	0.878	2.722	0.436
P20	7.486	0.058	8.850	0.031**	0.789	0.852
P21	0.204	0.977	1.220	0.748	2.162	0.539
P22	2.000	0.572	0.741	0.864	2.211	0.530
P23	2.944	0.400	0.671	0.880	3.755	0.289

Notes: * p<0.1, ** p<0.05 *** p<0.01. P1 to P23 denotes Period 1 to Period 23.

coming out of this table. First, that differences in bribe rates between groups are significant only for the early period of the experiment. Second, that differences between the groups are statistically significant only for queue-jumping bribes and not for counter-bribes.

one round data discards information (as any aggregation across rounds) and this is why non-parametric tests cannot easily condition on all the information available. The regression analysis approach we offer in the next section tries to mitigate this concern by conditioning on all the information we have available. Harrison (2007) further notes that Pagan and Ullah (1999) acknowledge the strengths and weaknesses of the field of non-parametric econometrics and view non-parametric econometrics as complementary to parametric tools.

3.2 Regression Analysis

In this section we discuss the results of random effects probit models with clustered standard errors at the group level. Table 5 shows coefficient estimates from four different specifications. Model (1) uses group dummies, a period variable and a last period dummy as well as a dummy that captures whether the subject was in the third place in queue (vs. the second place in queue).[5] As we observe, none of the group dummies is statistically significant. There is, however, a significant positive effect of periods i.e., the probability of bribing increases across periods while in the very last period the probability of bribing decreases. In addition, the '3rd in queue' dummy positively affects the probability of bribing which is to say that subjects have a higher probability of offering queue-jumping bribes than counter bribes.

Model (2) augments the specification by adding interaction terms of the group dummies and the period variable. This was done to capture the differential effect of groups across periods as evident in Figures 2 to 4 and Table 4. A Likelihood ratio (LR) test indicates that the model with interaction terms (model (2)) fits the data significantly better ($\chi^2 = 23.3, p - value < 0.001$) than the model with no interaction terms (model (1)). In model (2) the associated coefficients for the group dummies 'Greeks-majority' and 'Greeks-only' are positive and statistically significant. This is to be interpreted that the groups with more Greeks have a higher probability of bribing (as compared to the Germans-only group) in the early periods. The negative interaction terms indicate that this positive effect on bribing in the early periods is decreased across periods. This is consistent with the insight we gained from Figure 2. The rest of the variables are consistent, in terms of direction of the effect and statistical significance, with model (1).

Model (3) augments model (2) by adding interaction terms of the group dummies with the '3rd in queue' dummy. This is to capture the differential effect depicted in Figure 3 and Figure 4 as well as in the last two columns of Table 4, with respect to counter-bribes and queue-jumping bribes. In addition, a Likelihood ratio test indicates that this model (model (3)) fits the data significantly better ($\chi^2 = 7.68, p - value = 0.053$) than model (1). While most of the results are consistent with our discussion for model (2) the introduction of additional interaction terms changes the

[5]The last period dummy captures the non-linearity arising from end-game effects i.e., the incentive in the last period of the game is to select not to bribe the public official.

Table 5: Random effects probit regressions (coefficient estimates)

	(1)		(2)		(3)		(4)	
Germans-majority	0.095	(0.238)	0.407	(0.320)	0.300	(0.339)	0.376	(0.332)
Greeks-majority	0.288	(0.232)	0.544*	(0.291)	0.423	(0.311)	0.490	(0.303)
Greeks-only	0.267	(0.245)	0.695**	(0.294)	0.561*	(0.320)	0.541*	(0.310)
Period	0.062***	(0.004)	0.084***	(0.008)	0.084***	(0.008)	0.059***	(0.012)
3rd in queue	0.167***	(0.048)	0.167***	(0.048)	-0.018	(0.093)	0.011	(0.098)
Last period	-1.835***	(0.120)	-1.845***	(0.120)	-1.847***	(0.120)	-1.924***	(0.154)
Germans-majority $\times$ Period	-	-	-0.026**	(0.011)	-0.026**	(0.011)	-0.033***	(0.012)
Greeks-majority $\times$ Period	-	-	-0.022**	(0.010)	-0.022**	(0.010)	-0.029***	(0.010)
Greeks-only $\times$ Period	-	-	-0.036***	(0.011)	-0.036***	(0.011)	-0.045***	(0.011)
Germans-majority $\times$ 3rd in queue	-	-	-	-	0.213*	(0.122)	0.224	(0.145)
Greeks-majority $\times$ 3rd in queue	-	-	-	-	0.243**	(0.123)	0.241*	(0.133)
Greeks-only $\times$ 3rd in queue	-	-	-	-	0.269*	(0.147)	0.279	(0.184)
N of times 2nd in queue	-	-	-	-	-	-	0.206**	(0.083)
Minority	-	-	-	-	-	-	-0.240**	(0.113)
Constant	-0.349*	(0.200)	-0.605**	(0.248)	-0.513**	(0.261)	-0.452*	(0.244)
$\log(\sigma_u^2)$	0.051	(0.250)	0.069	(0.251)	0.069	(0.251)	0.097	(0.479)
N	7248		7248		7248		7248	
Log-likelihood	-3553.203		-3541.602		-3537.763		-3463.544	

Notes: Germans-only is the base group. Standard errors in parentheses. * p<0.1, ** p<0.05 *** p<0.01

discussion about the '3rd in queue' variable which captures the difference between counter bribes and queue-jumping bribes. More specifically, the '3rd in queue' dummy is no longer statistically significant while the interaction terms of the '3rd in queue' dummy with the group dummies are positive and statistically significant. The interpretation of these effects is that counter-bribes and queue-jumping bribes do not differ significantly for the Germans-only group while for all the other groups the probability of queue-jumping bribes are significantly higher than counter-bribes.

Model (4) introduces two additional controls with respect to the specification in model (3). One of the additional variables is number of times a person was second in queue and was jumped at any given period. As evident, this has a positive and statistically significant impact on bribing behavior which is to say that subjects carry a long term memory over the outcome of the game at any given period. The second variable is a 'minority' dummy signifying subjects that are a minority in their group (i.e., 1 Greek in the German group or 1 German in the Greek group). This variable has a negative and statistically significant effect on the probability of bribing. Model (4) fits the data significantly better than model (3) based on a LR test ($\chi^2 = 148.44, p - value < 0.001$).[6]

Table A1 in Appendix B shows results from two additional specifications. Model (5) adds a set of demographic variables like age, gender and experience with participating in other experiments. Although this specification does not change any of our conclusions, a LR test does not reject the null ($\chi^2 = 1.09, p - value = 0.779$) that this specification fits the data equally well with model (4). In addition, model (6) adds a variable of political ideology in the specification with the downside of a drop in sample size due to many non-responses. Results are robust to this specification as well. Consequently, we base all our subsequent discussion on model (4) of Table 5.

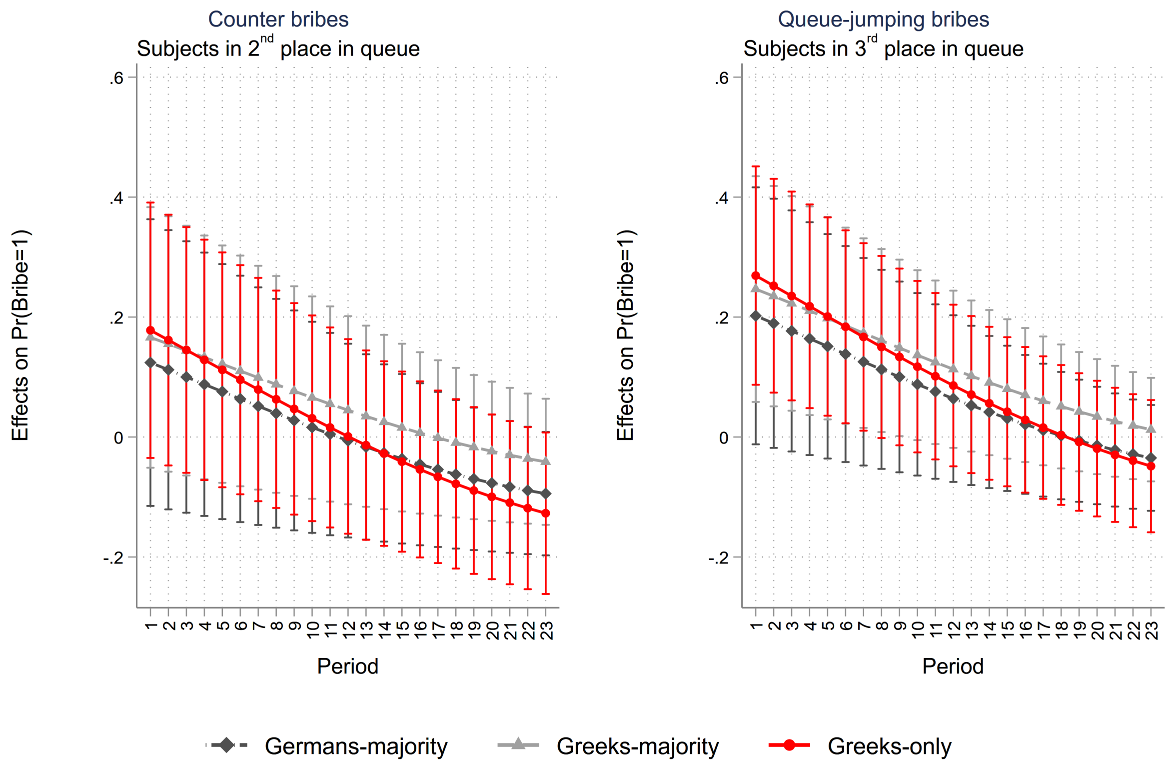
[6]We also estimated a variant of model (4) where instead of the number of times a person has been queue-jumped, we added two dummies: a) whether a person has been queue jumped once, and b) whether a person has been queue jumped *twice in a row*. These two variables can be thought of as a proxy for beliefs because they capture knowledge of whether one in the group bribes and whether both in the group bribe, respectively. Results are essentially similar to model (4) in Table 5 and marginal effects similar to Figures 3 and 4 are produced (see Table A3 and Figures 7 and 8 in the Appendix). Moreover, we estimate that being queue-jumped once increases the probability to bribe by 15.05% (p-value < 0.001) while being queue-jumped *twice in a row* increases the probability to bribe by 30.52% (p-value < 0.001).

3.3 Marginal Effects

Coefficients estimates from the probit models show the effects on the unobservable latent variable. To quantify the effects for the main variables of interest, we estimated marginal effects for the associated variables of interest.[7] Figure 5 visualizes the estimated marginal effects associated with the group dummies of model 4. The left part of Figure 5 presents average marginal effects with their 95% CIs for counter bribes (i.e., subjects 2nd in queue). As evident, all marginal effects span around zero indicating that groups do not differ in their counter bribing behavior across all periods. The right part of Figure 5 shows the associated marginal effects and their 95% CIs for the queue-jumping bribes (i.e., for subjects 3rd in queue). The graph indicates that up to period 7 subjects in the Greeks-majority and the Greeks-only groups have a higher and statistically significant probability of submitting queue-jumping bribes relative to the 'Germans-only' group. Table A2 indicates that this effect is equivalent to a 26.9% higher probability of a queue-jumping bribe for the 'Greeks only' group (as compared to the 'Germans only' group) in period 1 and drops to 18.4% in period 6. In later periods all marginal effects converge around zero which is an indication that queue-jumping behavior converges for all groups to a non-significant difference.

[7] The estimation of marginal effects for interaction terms can be found in Table A2 in the Appendix B shows the associated marginal effects.

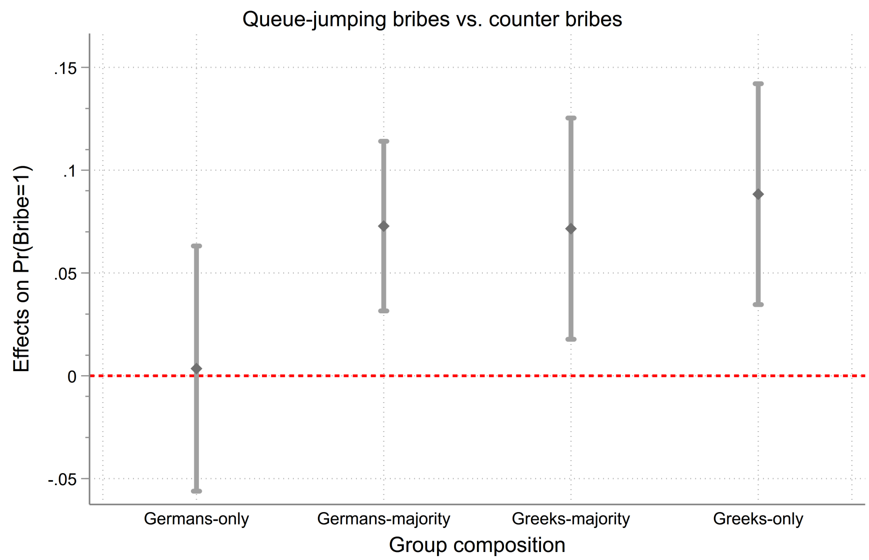
Figure 5: Average marginal effects for groups by period and bribe type with 95% CIs based on model (4) of Table 5



Finally, Figure 6 shows the marginal effect of queue-jumping bribes vs. counter bribes across the four different groups. This graph suggests that groups with Greek participants exhibit a positive probability of queue-jumping bribes (as compared to counter-bribes). As we have seen before, the difference is not significant for the 'Germans-only' group.

We further calculated the marginal effects for the rest of the variables of model (4) and we only report inline what we thought is more interesting: a) subjects are 57.7% less likely to bribe (p-value < 0.001) in the last period of the game - a significant end-game effect, b) each time a person is queue-jumped over the course of the game increases the probability of bribing by 6.2% (p-value $= 0.01$) and being in the minority of a group results in a 7.19% lower probability of bribing (p-value $= 0.03$).

Figure 6: Average marginal effects for queue-jumping bribes vs counter-bribes by group with 95% CIs based on model (4) of Table 5



4 Discussion and Conclusion

Our findings suggest that Greeks tend to bribe more often than Germans but only in the early periods of the game. The Germans-only groups quickly catch up and by the 10th period any differences in bribing rates that could be attributed to cultural norms fade away as the participants familiarize themselves with the institutional setup of our experiment. Overall, we conclude that, in the medium to long-term, it is institutions rather than culture that is the primary determinant of differences in bribing attitudes across countries. Yet, in the short term, differences in cultural norms may explain both how past equilibria may have come into fruition or influence the rate of convergence to new equilibria.

Our study is the first to examine how the queuing process by which public administrations provide the majority of their services may influence corruption. In our queue-jumping game, we disentangle between bribes paid with the aim to jump the queue (i.e. queue-jumping bribes) and bribes with the aim to maintain the current position in the queue (i.e. counter-bribes). Even though both types of bribes are profit-maximizing, arguably, the latter carries a lower moral cost. Queue-jumping bribes are motivated by an incentive to steal someone's else turn. In contrast, counter-bribes are motivated by maintaining what is rightfully yours, i.e., your current position in the queue. If cultural norms are identical across countries we should observe no differences on the either of the two types of bribes. However, in designing this experiment, we anticipated an asymmetric effect, where even though the aggregate bribe rates would be higher in the Greeks-only treatment relative to the Germans-only treatment, the observed differences could be explained by differences in counter-bribes. Confirming that hypothesis would have been in line with an interpretation of our results that as Greeks have experienced more institutional corruption than Germans (see Transparency International, 2013, 2017, 2020), they anticipate increased bribing behavior from the start of the game. Yet our findings corroborate our initial intuition only in part. Even though we find an asymmetric effect between the two types of bribes, the result is in the opposite direction. Thus, in contrast to our original intuition, while counter-bribes are not significantly different across populations, the Greeks-only and the Greek-majority groups, on average, had a higher probability of offering a bribe to queue-jump than the Germans-only groups in the early periods of the game. The observed differences persist even after we control for subject's beliefs concerning how many civilians in their group are willing to bribe to queue-jump. One interpretation of the observed behavior could be that Greeks (Germans) are more (less) lenient towards bribing behavior than Germans (Greeks). This interpretation would be in line with the findings of Cameron et al. (2009) who observed that Indians were more likely to bribe but less likely to punish than Australians, Indonesians, and Singaporeans, as well as the findings of Banuri and Eckel (2015), who found that punishment was more successful with American than Pakistani participants. As with punishment, an important implication of this result is that as counter-bribes are relatively lower in the Greeks-only groups, bribing to queue-jump becomes more attractive, which in turn may explain differences in bribing attitudes across populations. Future research could further explore how cultural differences influence bribing attitudes across different types of bribes, and examine how differences in queue lengths influence bribing behaviour.

In the intercultural treatments, we find that minorities, irrespective of their nationality, and even though nobody else in the group can identify the minority civilian, bribe less. If cultural differences and beliefs drive bribing, everything else constant, we should have found that both the Greek and German minorities bribe more often relative to the Greeks-only and the Germans-only treatments, respectively. For the Greek minority, everything else constant, it is more profitable to bribe in a group with lower bribe rates. Similarly, for the German minority, it is more costly not to bribe in a group with higher average bribe rates. Thus, cultural differences could not explain our results.[8] Our interpretation of our result is that individuals, when a minority, tend to behave more prosocially. This interpretation, although novel in the context of bribing behavior, is in line with a large body of research in psychology on outgroup favoritism by minority groups (e.g. Hinkle and Brown, 1990; Jost and Burgess, 2000; Hewstone et al., 2002). Tsutsui and Zizzo (2014) report an experiment on the impact of group status on trust, trustworthiness, and discrimination. In line with our results, they find that minorities tend to discriminate less and behave more prosocially towards majorities. Overall, we believe that this finding indicates that studying intercultural behavior could be an exciting avenue for future research.

[8] Our results cannot be explained by a social preference model with group identity either, as the model would also predict that minorities would bribe more often. Another possibility is that bribing attitudes are a positive function of beliefs. In that case, individuals would behave as conditional co-operators, i.e, bribe less if they expect others to bribe less, and more if they expect others to bribe more. If so, we should observe that the Greek minority subjects bribe less often and the German minority subjects bribe more often, relative to their counterparts in the monocultural groups.

References

Abbink, K., U. Dasgupta, L. Gangadharan, and T. Jain (2014). Letting the briber go free: An experiment on mitigating harassment bribes. *Journal of Public Economics 111*, 17–28.

Abbink, K., E. Freidin, L. Gangadharan, and R. Moro (2018, 07). The Effect of Social Norms on Bribe Offers. *The Journal of Law, Economics, and Organization 34*(3), 457–474.

Abbink, K., B. Irlenbusch, and E. Renner (2002). An experimental bribery game. *Journal of Law, Economics, and Organization 18*(2), 428–454.

Abbink, K. and D. Serra (2012). *Chapter 4 Anticorruption Policies: Lessons from the Lab*, Volume 15 of *Research in Experimental Economics*, pp. 77–115. Emerald Group Publishing Limited.

Abbink, K. and K. Wu (2017). Reward self-reporting to deter corruption: An experiment on mitigating collusive bribery. *Journal of Economic Behavior & Organization 133*, 256 – 272.

Abeler, J., A. Falk, L. Goette, and D. Huffman (2011). Reference points and effort provision. *American Economic Review 101*(2), 470–92.

Achim, M. V., V. L. Vaidean, and S. N. Borlea (2020). Corruption and health outcomes within an economic and cultural framework. *The European Journal of Health Economics 21*(2), 195–207.

Ackert, L. F., N. Charupat, B. K. Church, and R. Deaves (2006). An experimental examination of the house money effect in a multi-period setting. *Experimental Economics 9*(1), 5–16.

Alatas, V., L. Cameron, A. Chaudhuri, N. Erkal, and L. Gangadharan (2009). Gender, culture, and corruption: Insights from an experimental analysis. *Southern Economic Journal 75*(3), 663–680.

Anderson, J., S. V. Burks, J. Carpenter, L. Götte, K. Maurer, D. Nosenzo, R. Potter, K. Rocha, and A. Rustichini (2013). Self-selection and variations in the laboratory measurement of other-regarding preferences across subject pools: evidence from one college student and two adult samples. *Experimental Economics 16*(2), 170–189.

Andreoni, J. (1990). Impure altruism and donations to public goods: A theory of warm-glow giving. *The Economic Journal 100*(401), 464–477.

Azfar, O. and W. R. Nelson (2007). Transparency, wages, and the separation of powers: An experimental analysis of corruption. *Public Choice 130*(3), 471–493.

Banerjee, R. (2016a). Corruption, norm violation and decay in social capital. *Journal of Public Economics 137*, 14 – 27.

Banerjee, R. (2016b). On the interpretation of bribery in a laboratory corruption game: moral frames and social norms. *Experimental Economics 19*(1), 240–267.

Banuri, S. and C. Eckel (2012). The effects of sanctions on bribery: US versus pakistan. *CBEES Working Paper Series 09-01*.

Banuri, S. and C. Eckel (2015). Cracking down on bribery. *Social Choice and Welfare 45*(3), 579–600.

Barr, A. and D. Serra (2010). Corruption and culture: An experimental analysis. *Journal of Public Economics 94*(11-12), 862–869.

Becker, G. S. and G. J. Stigler (1974). Law enforcement, malfeasance, and compensation of enforcers. *The Journal of Legal Studies 3*(1), 1–18.

Bellemare, C., S. Kröger, and A. Van Soest (2008). Measuring inequity aversion in a heterogeneous population using experimental decisions and subjective probabilities. *Econometrica 76*(4), 815–839.

Belot, M., R. Duch, and L. Miller (2015). A comprehensive comparison of students and non-students in classic experimental games. *Journal of Economic Behavior & Organization 113*, 26 – 33.

Benabou, R. and J. Tirole (2006, December). Incentives and prosocial behavior. *American Economic Review 96*(5), 1652–1678.

Bicchieri, C., E. Dimant, S. Gaechter, and D. Nosenzo (2020). Observability, Social Proximity, and the Erosion of Norm Compliance. Technical report.

Bo, L., Y. Wang, and X. Yang (2011). Some integral functionals of reflected sdes and their applications in finance. *Quantitative Finance 11*(3), 343–348.

Borjas, G. J. (2019, May). Immigration and economic growth. Working Paper 25836, National Bureau of Economic Research.

Bornhorst, F., A. Ichino, O. Kirchkamp, K. H. Schlag, and E. Winter (2010). Similarities and differences when building trust: the role of cultures. *Experimental Economics 13*(3), 260–283.

Boubtane, E., J.-C. Dumont, and C. Rault (2016, 02). Immigration and economic growth in the OECD countries 19862006. *Oxford Economic Papers 68*(2), 340–360.

Brislin, R. W. (1970). Back-translation for cross-cultural research. *Journal of Cross-Cultural Psychology 1*(3), 185–216.

Cameron, L., A. Chaudhuri, N. Erkal, and L. Gangadharan (2009). Propensities to engage in and punish corrupt behavior: Experimental evidence from australia, india, indonesia and singapore. *Journal of Public Economics 93*(7-8), 843–851.

Cappelen, A. W., K. Nygaard, E. O. Sorensen, and B. Tungodden (2015). Social preferences in the lab: A comparison of students and a representative population. *The Scandinavian Journal of Economics 117*(4), 1306–1326.

Carpenter, J., C. Connolly, and C. K. Myers (2008). Altruistic behavior in a representative dictator experiment. *Experimental Economics 11*(3), 282–298.

Charness, G. and M. Rabin (2002). Understanding social preferences with simple tests. *The Quarterly Journal of Economics 117*(3), 817–869.

Chen, Y., L. Razzolini, and T. L. Turocy (2007). Congestion allocation for distributed networks: an experimental study. *Economic Theory 33*(1), 121–143.

Clark, J. (2002). House money effects in public good experiments. *Experimental Economics 5*(3), 223–231.

Dahlberg, S. and M. Solevid (2016). Does corruption suppress voter turnout? *Journal of Elections, Public Opinion and Parties 26*(4), 489–510.

Daley, S. (2012). A tale of Greek enterprise and olive oil, smothered in red tape. Available at https://www.nytimes.com/2012/03/19/world/europe/in-greece-business-rules-can-puzzle-entrepreneurs.html.

Del Monte, A. and E. Papagni (2001). Public expenditure, corruption, and economic growth: the case of italy. *European Journal of Political Economy 17*(1), 1 – 16.

Dieckmann, A., V. Grimm, M. Unfried, V. Utikal, and L. Valmasoni (2016). On trust in honesty and volunteering among europeans: Cross-country evidence on perceptions and behavior. *European Economic Review 90*, 225–253.

Dincer, O. and O. Teoman (2019). Does corruption kill? evidence from half a century infant mortality data. *Social Science & Medicine 232*, 332 – 339.

Dold, M. and M. Khadjavi (2017). Jumping the queue: An experiment on procedural preferences. *Games and Economic Behavior 102*, 127–137.

Dshalalow, J. H. (1997). *Frontiers in queueing: models and applications in science and engineering*, Volume 7. CRC press.

Exadaktylos, F., A. M. Espín, and P. Brañas-Garza (2013). Experimental subjects are not different. *Scientific Reports 3*(1), 1213.

Falk, A., S. Meier, and C. Zehnder (2013). Do lab experiments misrepresent social preferences? the case of self-selected student samples. *Journal of the European Economic Association 11*(4), 839–852.

Fehr, E. and K. M. Schmidt (1999). A theory of fairness, competition, and cooperation. *The Quarterly Journal of Economics 114*(3), 817–868.

Fischbacher, U. (2007). z-tree: Zurich toolbox for ready-made economic experiments. *Experimental Economics 10*(2), 171–178.

Frank, B., S. Li, C. Bühren, and H. Qin (2015). Group decision making in a corruption experiment: China and germany compared. *Jahrbucher fur Nationalokonomie und Statistik 235*(2), 207 – 227.

Frank, B. and G. G. Schulze (2000). Does economics make citizens corrupt? *Journal of economic behavior & organization 43*(1), 101–113.

Friedkin, N. E. (2004). Social cohesion. *Annual Review of Sociology 30*(1), 409–425.

Frigau, L., T. Medda, and V. Pelligra (2019). From the field to the lab. an experiment on the representativeness of standard laboratory subjects. *Journal of Behavioral and Experimental Economics 78*, 160 – 169.

Gaggero, A., S. Appleton, and L. Song (2018). Framing effects on bribery behaviour: experimental evidence from china and uganda. *Journal of the Economic Science Association 4*(1), 86–97.

Green, L. (2006). Queueing analysis in healthcare. In R. W. Hall (Ed.), *Patient Flow: Reducing Delay in Healthcare Delivery. International Series in Operations Research & Management Science*, Volume 91, pp. 281–307. Boston, MA: Springer.

Greiner, B. (2015). Subject pool recruitment procedures: Organizing experiments with ORSEE. *Journal of the Economic Science Association 1*(1), 114–125.

Grundler, K. and N. Potrafke (2019). Corruption and economic growth: New empirical evidence. *European Journal of Political Economy 60*, 101810.

Gupta, S., H. Davoodi, and R. Alonso-Terme (2002). Does corruption affect income inequality and poverty? *Economics of Governance 3*(1), 23–45.

Harrison, G. W. (2007). House money effects in public good experiments: Comment. *Experimental Economics 10*(4), 429–437.

Heidemann, D. (2001). A queueing theory model of nonstationary traffic flow. *Transportation Science 35*(4), 405–412.

Hewstone, M., M. Rubin, and H. Willis (2002). Intergroup bias. *Annual Review of Psychology 53*(1), 575–604. PMID: 11752497.

Hinkle, S. and R. Brown (1990). Intergroup comparisons and social identity: Some links and lacunae. *Social identity theory: Constructive and critical advances 48*, 70.

Holmberg, S. and B. Rothstein (2011). Dying of corruption. *Health Economics, Policy and Law 6*(4), 529547.

Hooghe, M., T. Reeskens, D. Stolle, and A. Trappers (2009). Ethnic diversity and generalized trust in europe: A cross-national multilevel study. *Comparative Political Studies 42*(2), 198–223.

Hope, K. (2016). Athens approves luxury Cretan tourist project after 25-year wait. Available at https://www.ft.com/content/2f437b52-e7aa-11e5-a09b-1f8b0d268c39.

Inoue, J.-i. and N. Sazuka (2010). Queueing theoretical analysis of foreign currency exchange rates. *Quantitative Finance 10*(2), 121–130.

Integrity Watch (2016). National corruption survey 2016: Afghan perceptions and experiences of corruption. Available at https://iwaweb.org/wp-content/uploads/2016/12/NCS__English__for-web.pdf. Last accessed on August 5, 2020.

Jiang, T., J. W. Lindemans, and C. Bicchieri (2015). Can trust facilitate bribery? experimental evidence from china, italy, japan, and the netherlands. *Social Cognition 33*(5), 483–504.

Jost, J. T. and D. Burgess (2000). Attitudinal ambivalence and the conflict between group and system justification motives in low status groups. *Personality and Social Psychology Bulletin 26*(3), 293–305.

Kőszegi, B. and M. Rabin (2007). Reference-dependent risk attitudes. *The American Economic Review 97*(4), 1047–1073.

Krupka, E. L. and R. A. Weber (2013). Identifying social norms using coordination games: Why does dictator game sharing vary? *Journal of the European Economic Association 11*(3), 495–524.

Levitt, S. D. and J. A. List (2007). What do laboratory experiments measuring social preferences reveal about the real world? *Journal of Economic Perspectives 21*(2), 153–174.

Li, Q., L. An, J. Xu, and M. Baliamoune-Lutz (2018). Corruption costs lives: evidence from a cross-country study. *The European Journal of Health Economics 19*(1), 153–165.

Loch, C. H. and Y. Wu (2007). *Behavioral operations management.* Foundations and trends in technology, information and operations management. Now Publishers.

Mauro, P. (1995). Corruption and growth. *The Quarterly Journal of Economics 110*(3), 681–712.

Méon, P.-G. and K. Sekkat (2005). Does corruption grease or sand the wheels of growth? *Public Choice 122*(1), 69–97.

Milgram, S., H. J. Liberty, R. Toledo, and J. Wackenhut (1986). Response to intrusion into waiting lines. *Journal of Personality and Social Psychology 51*(4), 683.

OECD (2018). *Behavioural Insights for Public Integrity.* Paris: OECD Publishing.

Ortega, F. and G. Peri (2014). Openness and income: The roles of trade and migration. *Journal of International Economics 92*(2), 231 – 251.

Pagan, A. and A. Ullah (1999). *Nonparametric Econometrics.* Cambridge, UK: Cambridge University Press.

Peter, P. O. and R. Sivasamy (2019). Queueing theory techniques and its real applications to health care systems outpatient visits. *International Journal of Healthcare Management 0*(0), 1–9.

Rose-Ackerman, S. (1975). The economics of corruption. *Journal of Public Economics 4*(2), 187 – 203.

Rose-Ackerman, S. (2004). *Chapter 6 Governance and Corruption*, pp. 77–115. Global Crises, Global Solutions. Cambridge: Cambridge University Press.

Ryvkin, D. and D. Serra (2020). Corruption and competition among bureaucrats: An experimental study. *Journal of Economic Behavior & Organization 175*, 439 – 451.

Salmon, T. C. and D. Serra (2017). Corruption, social judgment and culture: An experiment. *Journal of Economic Behavior & Organization 142*, 64 – 78.

Schmid, K., A. A. Ramiah, and M. Hewstone (2014). Neighborhood ethnic diversity and trust: The role of intergroup contact and perceived threat. *Psychological Science 25*(3), 665–674.

Schmitt, B. H., L. Dube, and F. Leclerc (1992). Intrusions into waiting lines: does the queue constitute a social system? *Journal of Personality and Social Psychology 63*(5), 806.

Shunko, M., J. Niederhoff, and Y. Rosokha (2018). Humans are not machines: The behavioral impact of queueing design on service time. *Management Science 64*(1), 453–473.

Snowberg, E. and L. Yariv (2018, June). Testing the waters: Behavior across participant pools. Working Paper 24781, National Bureau of Economic Research.

Stein, W. E., A. Rapoport, D. A. Seale, H. Zhang, and R. Zwick (2007). Batch queues with choice of arrivals: Equilibrium analysis and experimental study. *Games and Economic Behavior 59*(2), 345–363.

Stiglitz, J. E. (1992). Prices and queues as screening devices in competitive markets. *Economic Analysis of Markets and Games: Essays in Honor of Frank Hahn*, 128–66.

Sweeney, G., K. Despota, and S. Lindner (2013). *Transparency International Global Corruption Report: Education.* New York: Routlegde.

Transparency International (2013). Global corruption barometer 2013. Available at https://images.transparencycdn.org/images/2013_GlobalCorruptionBarometer_EN_200525_112757.pdf. Last accessed on August 5, 2020.

Transparency International (2017). Global corruption barometer 2017. Available at https://images.transparencycdn.org/images/GCB_Citizens_voices_FINAL.pdf. Last accessed on August 5, 2020.

Transparency International (2020). Corruption perception index 2019 report. Available at https://images.transparencycdn.org/images/2019_CPI_Report_EN.pdf. Last accessed on August 5, 2020.

Tsutsui, K. and D. J. Zizzo (2014). Group status, minorities and trust. *Experimental Economics 17*(2), 215–244.

Ullah, B. (2020). Financial constraints, corruption, and sme growth in transition economies. *The Quarterly Review of Economics and Finance 75*, 120 – 132.

van Veldhuizen, R. (2013). The influence of wages on public officials corruptibility: A laboratory investigation. *Journal of Economic Psychology 39*, 341 – 356.

Vilaplana, J., F. Solsona, I. Teixidó, J. Mateo, F. Abella, and J. Rius (2014). A queuing theory model for cloud computing. *The Journal of Supercomputing 69*(1), 492–507.

Zhou, R. and D. Soman (2008). Consumers' waiting in queues: The role of first-order and second-order justice. *Psychology & Marketing 25*(3), 262–279.

A Appendix: Experimental Instructions

INSTRUCTIONS

Introduction

Welcome to our study! Please remain quiet and do not talk to the other participants during the study. Also, switch off your phones and any other mobile devices. The study will last up to 150 minutes.

The study is **anonymous**; this means that you will not know with whom of the other participants you are interacting. If you have any questions during the study please raise your hand and the person in charge will answer your question personally.

There are no ‘correct’ or ‘wrong’ decisions in the study. However, how much you earn depends on your decisions and the decisions of the other participants. *We advise you to read the instructions carefully.*

In the study, we speak not of €, but of ECU. Your income from this study is initially calculated in ECUs. At the end of the study, the ECUs earned are **converted into Euro at a rate of 1 ECU = 2 Cents and paid out to you**. In addition, each participant receives a 4 Euro for showing up today.

Study Overview

The study is conducted simultaneously in two laboratories. One of the two laboratories is located in a university in Nuremberg (Germany) and the other in a university in Athens (Greece). All participants receive the same instructions (translated in their respective language).

1

In this study, there are **two roles: A and B**. At the beginning of the study, you are assigned a role at random. **One participant A and three participants B form a *group*. Each participant remains in his role and in his group throughout the entire study.**

There are four different group compositions possible in this study:

- *Composition 1:* Your group consists of
    - **3 participants B from** the university in **Nuremberg (Germany)**
    - and **1 participant A from** the university in **Nuremberg (Germany)**.
- *Composition 2:* Your group consists of
    - **3 participants B from** the university in **Athens (Greece)**
    - and **1 participant A from** the university in **Athens (Greece)**.
- *Composition 3:* Your group consists of
    - **1 participant B from** the university in **Nuremberg (Germany)**,
    - **2 participants B from** the university in **Athens (Greece),**
    - and **1 participant A from** the university in **Athens (Greece)**.
- *Composition 4:* Your group consists of
    - **1 participant B from** the university in **Athens (Greece)**,
    - **2 participants B from** the university in **Nuremberg (Germany)**,
    - and **1 participant A from** the university in **Nuremberg (Germany)**.

The composition of groups will be randomly determined at the beginning of the study. **Each participant remains in his composition throughout the study.**

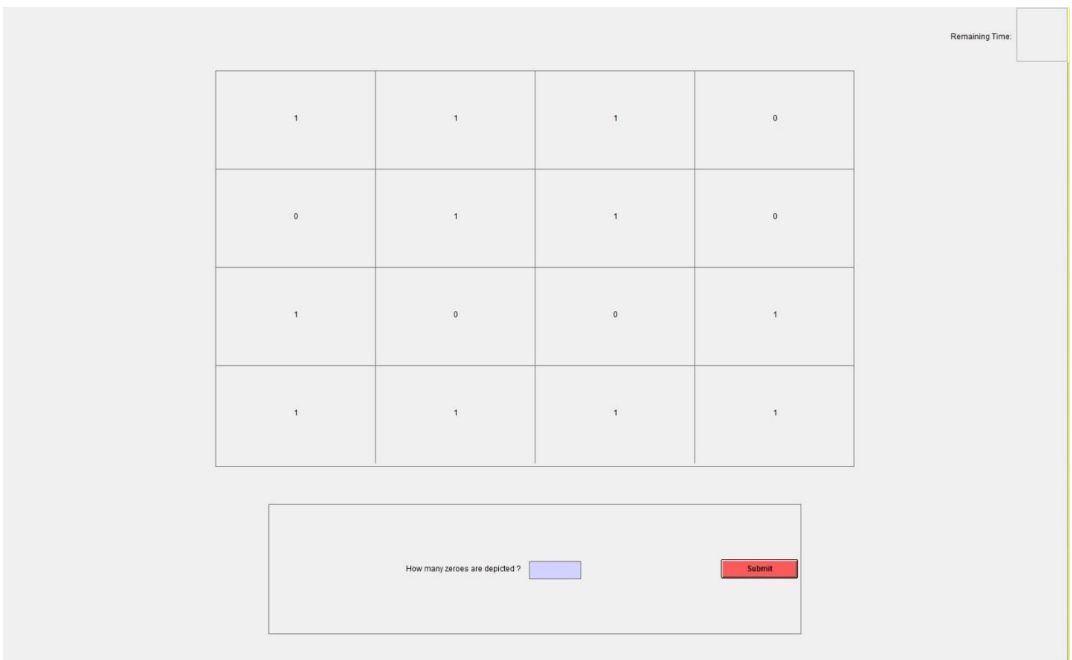
The study consists of two stages: “Practice” and “Main Study”.

At the beginning of the Main Study, you are informed about *your role* and *your group composition* on your computer screen.

Stage 1: Practice

In the first stage, **all** participants have to carry out a task. The task consists of determining the correct amount of zeroes in a table consisting of the numbers 0 and 1. The format of the table (i.e., the number of lines and columns) is the same for all tasks and participants. The task is presented to participants on your screens, as in the example below.

Each participant has 1 minute to carry out the task. After typing in the number the participant must confirm the answer by clicking the “Submit”-button. If a participant **carries out the task correctly within 1 minute**, he earns **100 ECU**. If a participant **does not carry out the task correctly within this timeframe**, he will earn nothing (**0 ECU**) from the task. This stage is conducted two times.

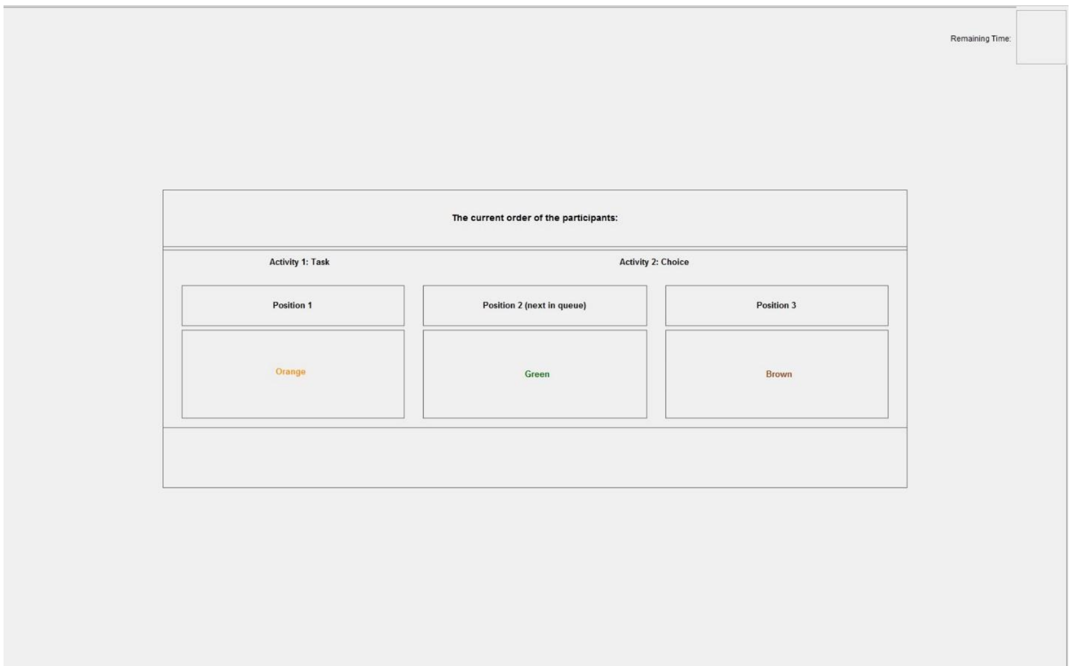


Example Task in Practice stage

Stage 2: Main Study

At the start of this stage the three participants B are randomly queued (first, second or third). The first B is called "Orange", the second is called "Green" and the third is called "Brown". The colours have no particular meaning. The colours are simply used as nicknames to facilitate the understanding of the study. Note that the order of the participants in the queue will change during the study, while each participant keeps his nickname (the colour). The screen below displays the initial order at the beginning of the study.

The participant B who is initially first in the queue (Orange) start by carrying out the *Task Activity* while the remaining participants B (Green and Brown) carry out the *Choice Activity* (explained below).

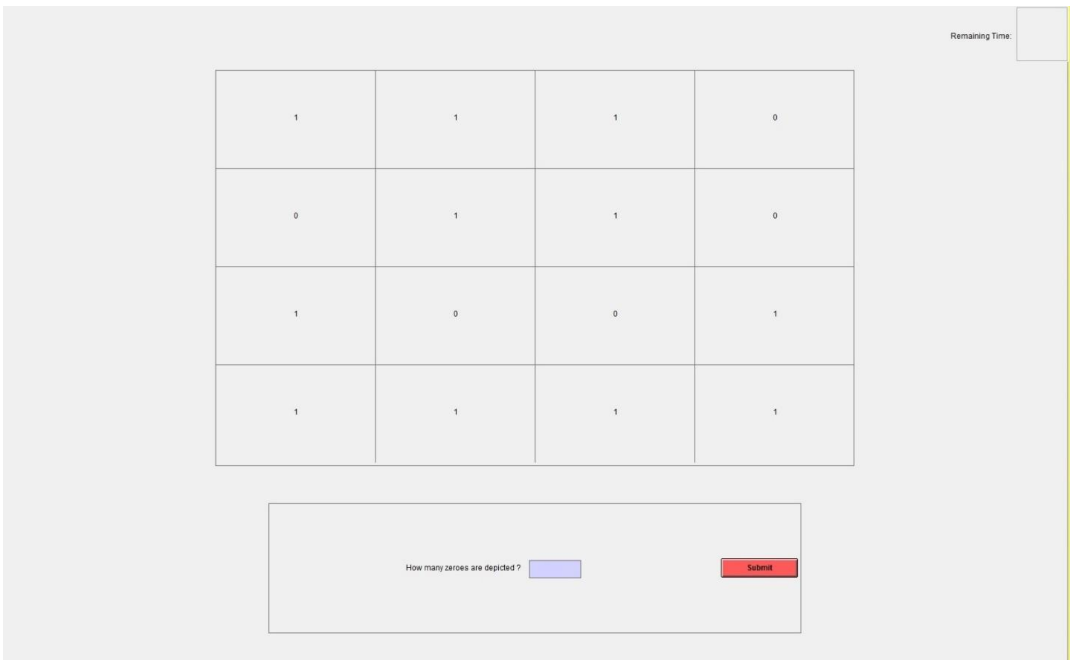


Initial order at the beginning of the Study

4

Activity 1: Task

The **participant B**, who is **first in the queue**, carries out this activity. He has to carry out the task, which is the same as the task completed in the **Practice** stage. Carrying out the task correctly within 1 minute earns the participant 100 ECU. **After 1 minute the tasks ends and the participant is automatically moved to the last position (position three) in the queue.**



Activity 1: Task

Activity 2: Choice

This activity determines, who will be the next to carry out the *Task Activity*. While the participant B who is first in the queue carries out the Task, the two participants B who are second and third in the queue carry out the *Choice Activity*. The two participants B in this activity have to make a choice.

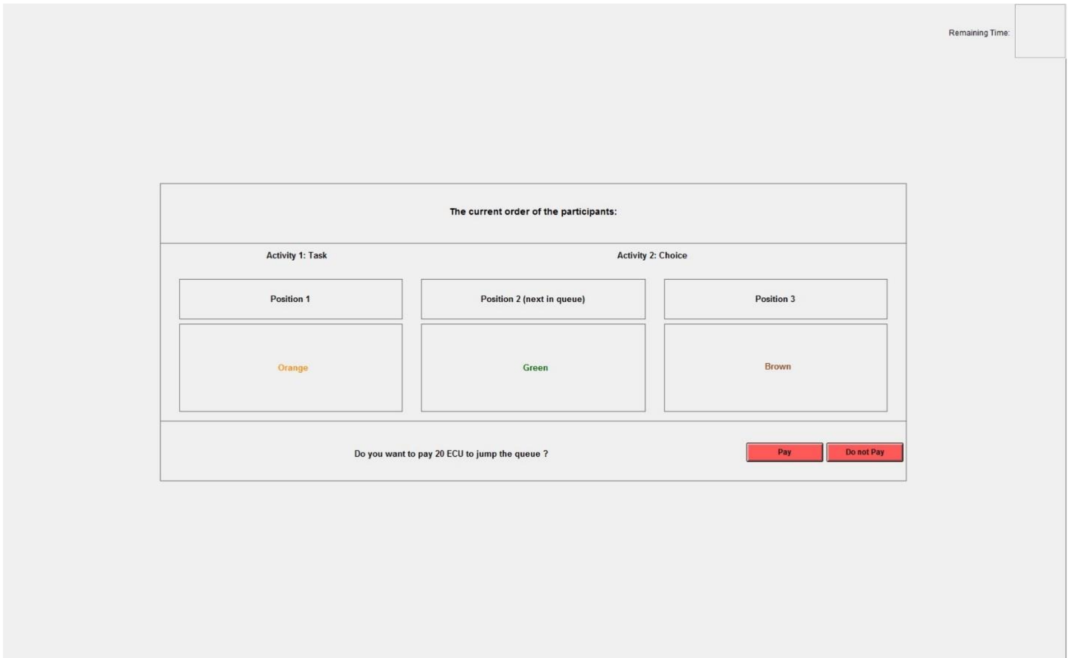
They have **two options**:

- The *first option* is to wait for their turn.
  - **If both participants choose this option**, the participant B, who is **currently the second** in the queue, **becomes the first** and the **currently third** participant B **becomes the second**.

- The *second option* is to pay to be moved to the front of the queue.
  - **If only one participant B decides to pay to jump the queue this participant becomes the first** in the queue. He pays 20 ECU. (15 ECU of his payment go to participant A and additional 5 ECU are deducted as administrative costs. These 5 ECU are not transferred to any other participant, i.e., they are destroyed in the process.) **The other participant B becomes the second** in the queue.

  - **If both participants B decide to pay to jump the queue one of them is randomly selected to become the first in the queue.** The participant B, who is selected to become the first pays 20 ECU. (15 ECU of his payment go to participant A and additional 5 ECU are deducted from his account as administrative cost.) In addition, the administrative cost of 5 ECU is deducted from the account of the other participant B. **The other participant B becomes the second** in the queue.

The screenshot below displays your decision screen for the example in which you are Brown and currently third in the queue.



Activity 2: Choice

7

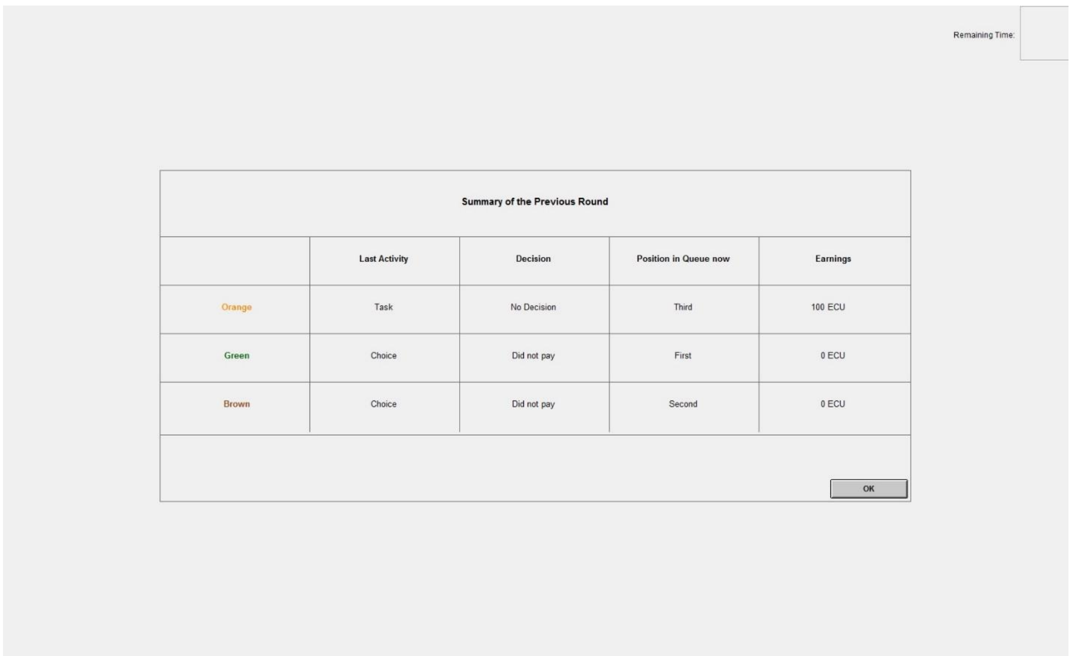
Participant A Activity

This activity starts after the *Task* and *Choice Activities* are completed. In this activity the Participant A is informed about the performance of the participant B who was previously in the respective round taking part in the *Task Activity*. Participant A needs to confirm this by clicking “OK” **within 1 minute**. By clicking “OK” the Participant A earns 35 ECU. If participant A does not click “OK” within 1 minute, he does not earn anything from this activity. This activity has no influence on Participant B’s earnings. In the meantime all Participants B need to wait for 1 minute.

Participant A Activity

End of a Round

After the end of the *Participant A Activity* one round is finished. At the end of a round all participants are informed about **their earnings**. In addition, each participant is informed about the **decisions of all other participants B** in his group and **about their earnings**. Hence, each participant is informed about the income of Participant A from the *Choice Activity*. Furthermore, each participant is informed about his **current position** in the queue before the start of the next round.



Feedback screen

The main study consists in total of 24 rounds.

Summary of the Earnings from the Main Study

The *Task Activity* is to be carried out 24 times (24 rounds) and there are three participants B. Thus, if in no round any participant B would pay in the *Choice Activity* to jump the queue, the order would never be shuffled and each participant B could carry out the task 8 times. Hence, each participant B would earn 1000 ECU from the *Task Activity* and would not have to pay anything in the *Choice Activity*. The total amount earned by each participant B would be 800 ECU. Participant A would earn in total 840 ECU from the *Participant A Activity* and nothing in addition from the *Choice Activity*.

If at some point in time a participant B would pay in the *Choice Activity* to jump the queue he could increase the number of times he could carry out the task in the *Task Activity* and consequently could increase his earnings. He would also increases the payoff of participant A. However, by doing so he would reduce the number of times the other participants B were able to carry out the task and consequently he would reduce their earnings. In addition, each time a participant B decides to pay for jumping the queue, money would be deducted from his account. This money would be destroyed in the process as administrative costs. Thus, the total money earned by the group of participants would be reduced.

The following table provides some examples of participants' earnings depending on their choices and on the choices made by other participants. Please note that these examples do not reflect all possible cases.

Examples of Average Earnings (in ECU)				
	Those who pay	**Those who do not pay**	**A**	**Admin Costs**
Example 1: No participant B ever pays to jump the queue	-	800	840	0
Example 2: One participant B always pays to jump the queue	960	600	1020	60
Example 3: Two participants B always pays to jump the queue	942,5	33,33	1200	121,66
Example 4: Each participant B always pays to jump the queue	600	-	1200	240

Please note that each participant B is free to choose to pay or not to pay to jump the queue in each round, i.e., he can always pay, never pay, or pay sometimes.

After the completion of the main study you are requested to complete a questionnaire. In the meantime we will be preparing your payments. Then we will call you to hand out your payments to you.

THANK YOU FOR PARTICIPATING IN OUR STUDY!

B Appendix: Additional tables

Table A1: Random effects probit regressions (coefficient estimates with additional controls)

	(5)		(6)	
Germans-majority	0.387	(0.344)	0.488	(0.382)
Greeks-majority	0.496	(0.319)	0.636	(0.393)
Greeks-only	0.559*	(0.330)	0.753**	(0.384)
Period	0.058***	(0.012)	0.061***	(0.015)
Germans-majority × Period	-0.033***	(0.012)	-0.030**	(0.015)
Greeks-majority × Period	-0.029***	(0.010)	-0.032**	(0.014)
Greeks-only × Period	-0.045***	(0.011)	-0.052***	(0.014)
3rd in queue	0.011	(0.098)	0.044	(0.122)
Germans-majority × 3rd in queue	0.224	(0.141)	0.197	(0.184)
Greeks-majority × 3rd in queue	0.242*	(0.133)	0.244	(0.193)
Greeks-only × 3rd in queue	0.278	(0.181)	0.263	(0.208)
Last period	-1.924***	(0.154)	-1.972***	(0.187)
N of times 2nd in queue	0.207**	(0.083)	0.217**	(0.103)
Minority	-0.229**	(0.109)	-0.377*	(0.202)
Age	0.011	(0.021)	0.016	(0.033)
Gender	0.090	(0.102)	0.027	(0.135)
Experience	-0.002	(0.021)	-0.001	(0.027)
Political ideology	-	-	-0.054	(0.120)
Constant	-0.732	(0.528)	-0.821	(0.764)
$\log(\sigma_u^2)$	0.096	(0.467)	0.189	(0.328)
N	7248		4439	
Log-likelihood	-3462.998		-2125.808	

Notes: Germans-only is the base group. Standard errors in parentheses. * p<0.1, ** p<0.05 *** p<0.01

Table A2: Marginal effects for treatment groups by position in queue and rounds

	Counter-bribes (2^{nd} in queue)			Queue Jumping bribes (3^{rd} in queue)		
	Germans-majority	Greeks-majority	Greeks-only	Germans-majority	Greeks-majority	Greeks-only
R1	0.124	0.166	0.178*	0.202*	0.247***	0.269***
	(0.116)	(0.106)	(0.107)	(0.107)	(0.095)	(0.101)
R2	0.112	0.155	0.162	0.190*	0.235**	0.252**
	(0.113)	(0.104)	(0.105)	(0.104)	(0.093)	(0.099)
R3	0.100	0.144	0.145	0.177*	0.223**	0.235**
	(0.110)	(0.102)	(0.104)	(0.101)	(0.090)	(0.096)
R4	0.088	0.133	0.129	0.164*	0.210**	0.218**
	(0.107)	(0.100)	(0.102)	(0.097)	(0.088)	(0.094)
R5	0.076	0.122	0.112	0.151	0.198**	0.201**
	(0.104)	(0.098)	(0.100)	(0.094)	(0.085)	(0.091)
R6	0.064	0.110	0.096	0.138	0.186**	0.184**
	(0.101)	(0.095)	(0.098)	(0.090)	(0.083)	(0.088)
R7	0.051	0.099	0.079	0.126	0.173**	0.167*
	(0.098)	(0.092)	(0.096)	(0.087)	(0.080)	(0.086)
R8	0.040	0.088	0.063	0.113	0.161**	0.150*
	(0.095)	(0.090)	(0.094)	(0.083)	(0.077)	(0.083)
R9	0.028	0.077	0.047	0.100	0.149**	0.134*
	(0.091)	(0.087)	(0.092)	(0.080)	(0.075)	(0.081)
R10	0.016	0.066	0.031	0.088	0.137*	0.117
	(0.088)	(0.084)	(0.090)	(0.077)	(0.072)	(0.078)
R11	0.005	0.055	0.016	0.076	0.125*	0.101
	(0.085)	(0.081)	(0.088)	(0.073)	(0.069)	(0.075)
R12	-0.006	0.045	0.001	0.064	0.113*	0.086
	(0.082)	(0.079)	(0.086)	(0.070)	(0.067)	(0.073)
R13	-0.016	0.035	-0.014	0.053	0.102	0.071
	(0.079)	(0.076)	(0.084)	(0.067)	(0.064)	(0.071)
R14	-0.027	0.025	-0.028	0.042	0.091	0.056
	(0.076)	(0.073)	(0.082)	(0.064)	(0.062)	(0.069)
R15	-0.036	0.016	-0.041	0.031	0.080	0.042
	(0.074)	(0.071)	(0.081)	(0.062)	(0.059)	(0.067)
R16	-0.045	0.007	-0.054	0.021	0.070	0.029
	(0.071)	(0.069)	(0.079)	(0.059)	(0.057)	(0.065)
R17	-0.054	-0.002	-0.066	0.011	0.060	0.016
	(0.069)	(0.066)	(0.078)	(0.057)	(0.055)	(0.064)
R18	-0.062	-0.009	-0.078	0.002	0.051	0.003
	(0.067)	(0.064)	(0.077)	(0.055)	(0.053)	(0.062)
R19	-0.070	-0.017	-0.089	-0.006	0.042	-0.008
	(0.065)	(0.062)	(0.076)	(0.053)	(0.051)	(0.061)
R20	-0.077	-0.024	-0.100	-0.014	0.034	-0.019
	(0.064)	(0.061)	(0.075)	(0.051)	(0.049)	(0.060)
R21	-0.083	-0.030	-0.109	-0.022	0.026	-0.030
	(0.063)	(0.059)	(0.074)	(0.049)	(0.048)	(0.059)
R22	-0.089	-0.036	-0.119	-0.028	0.019	-0.039
	(0.062)	(0.058)	(0.074)	(0.048)	(0.046)	(0.059)
R23	-0.094	-0.041	-0.127*	-0.035	0.012	-0.049
	(0.061)	(0.057)	(0.073)	(0.047)	(0.045)	(0.058)

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

Table A3: Random effects probit regressions (coefficient estimates) with beliefs variables

	(1)	
Germans-majority	0.308	(0.331)
Greeks-majority	0.413	(0.302)
Greeks-only	0.489*	(0.297)
Period	0.048***	(0.008)
Germans-majority × Period	-0.027**	(0.012)
Greeks-majority × Period	-0.024**	(0.010)
Greeks-only × Period	-0.039***	(0.011)
3rd in queue	0.031	(0.101)
Germans-majority × 3rd in queue	0.226*	(0.120)
Greeks-majority × 3rd in queue	0.256*	(0.136)
Greeks-only × 3rd in queue	0.274**	(0.129)
Last period	-1.743***	(0.125)
Been queue-jumped once	0.426***	(0.069)
Been queue-jumped twice in a row	1.000***	(0.085)
Minority	-0.238**	(0.107)
Constant	-0.504**	(0.250)
$\log(\sigma_u^2)$	-0.023	(0.123)
N	7248	
Log-likelihood	-3442.922	

Notes: Germans-only is the base group. Standard errors in parentheses. * p<0.1, ** p<0.05 *** p<0.01

C Appendix: Additional figures

Figure 7: Average marginal effects for groups by period and bribe type with 95% CIs based on Table A3

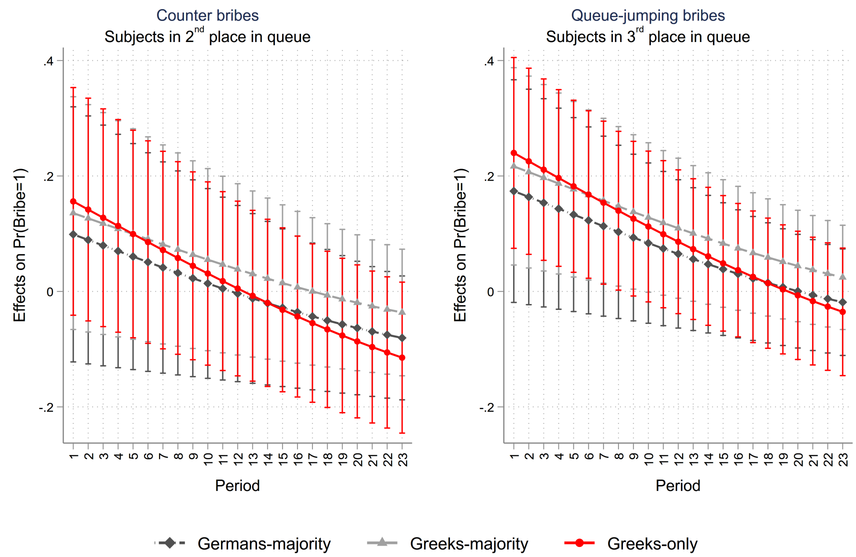


Figure 8: Average marginal effects for queue-jumping bribes vs counter-bribes by group with 95% CIs based on Table A3