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Håkan J. Holm
Victor Nee
Sonja Opper

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STRATEGIC DECISIONS: BEHAVIORAL DIFFERENCES BETWEEN CEOS AND OTHERS [*]

Håkan J. Holm[♦]

Victor Nee[♣]

Sonja Opper[♠]

Abstract: Differences in strategic decision making between CEOs and other people are interesting since CEOs make important economic decisions and impact values and norms in society. Our study combines a large stratified random sample of 199 CEOs of medium-size firms with a carefully selected control group of 200 comparable people. All subjects participated in three different incentivized strategic games—Prisoner's Dilemma, Chicken, Battle-of-the-Sexes. We report substantial and robust differences in both behavior and beliefs between the CEOs and the control group. The CEOs are closer to the socially optimal strategy profile in all games. Hence, as a group the CEOs out-competes the control-group members and thereby receives higher average earnings, but not by being smarter (in the narrow "rationalistic" sense) or more selfish, but by being more cooperative and less aggressive. (JEL: C70, C93, D22; L26)

[♦] Corresponding author: Hakan.Holm@nek.lu.se, Department of Economics, School of Economics and Management, P.O. Box 7082, 22007 Lund University, Sweden, Telephone:+46-46-2229551. [♣] Victor.Nee@cornell.edu, Department of Sociology, Cornell University. [♠] Sonja.Opper@nek.lu.se, Department of Economics, School of Economics and Management, Lund University,

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I. INTRODUCTION

Because CEOs are responsible for leading their firms in strategic action in competitive markets, it is reasonable to assume that they are more experienced with strategic decision making than comparable people who do not have this position. In addition, many CEOs are selected into their positions or 'survive' with their firms just because of their ability to make good strategic decisions. This would suggest that business leaders such as CEOs should differ in their strategic decision making from other people. However, whether this is indeed the case is an unresolved empirical question.

There are many reasons to seek a better understanding of potential inter-group differences in strategic decision making (see Frechette 2015 for a review). After all, one aim of game theory is to understand the strategic decisions of important actors in the economy (e.g., Von Neumann and Morgenstern 1944; Tirole 1988).[1] Substantive behavioral intergroup differences would have direct implications for the fitness of different theoretical models to predict strategic decisions of experienced business leaders.[2] Perhaps most significantly, business leaders and entrepreneurs are likely to play an important role in transmitting values, norms and beliefs to other actors in the economy (e.g., employees, politicians and business partners).

But whether and how CEOs differ behaviorally from others is an open and much disputed question.[3] A priori, one can think of many mechanisms that might make a CEO's strategic behavior different from that of other people. Overall, competitive forces tend to weed out irrational CEOs so that surviving CEOs choose strategies which are best responses to each other; that is, they constitute Nash equilibria. Such a mechanism can be supported when the Nash equilibria are evolutionary stable strategies (Smith 1982). There are also strategic situations (e.g., prisoner's dilemmas) where individually rational choices according to the non-cooperative Nash paradigm lead to a detrimental outcome for the involved parties,

[1] This also has consequences for how experimental results are to be evaluated. For instance, findings that undergraduate students in some situations substantially deviate from equilibrium predictions may be easier to "digest" if it can be shown that more economically important and experienced subjects make decisions closer to the equilibrium predictions.

[2] Even if this paper investigates differences between CEOs and others we do not claim that CEOs is a homogenous group, rather there is empirical evidence that CEOs differ and that this may affect how they run their firms (e.g., Bertrand and Schoar 2003).

[3] It is not difficult to find two opposing perspectives: one warm and bright—portraying business leaders as responsible actors not only contributing to social welfare, and employment but also taking social responsibility—and one cold and dark, portraying entrepreneurs as selfish profiteers (e.g., Van de Ven et al. 2007; Benabou and Tirole 2010).

and where instead prosocial or efficiency-oriented choices are favored (Bowles and Gintis 2011). Examples of situations where the benefit of cooperation and prosocial behavior are evident for CEOs include joint ventures and investments in infrastructure. Hence, another mechanism is social norms favoring efficient strategy choices that maximize the sum of the involved parties' payoffs. Such behavior can be sustained by the development of group-sanctioned norms and/or altruistic preferences through assortative matching (e.g., Bergstrom 2002; Alger and Weibull 2013). If this is the case one can expect that CEOs will be more efficiency-oriented in their strategic decision making than others and that the population as a whole consists of different strategic 'types' (e.g., Kurzban and Houser 2005).

Various empirical studies have investigated the strategic decision making of professionals (e.g., Cooper et al. 1999; Palacios-Huerta and Volij 2008); but because high-level professionals are hard to recruit, there are very few (e.g., Fehr and List 2004) that investigate incentivized choices in well-defined strategic games with CEOs. The present study is the first to investigate CEOs' choices in not just one but several incentivized strategic situations that capture fundamental problems of cooperation and coordination in business—and to compare the CEOs not with students, but with a control group of subjects who are similar to the CEOs in many respects.

For our study, we recruited 199 CEOs from private firms in two cities in the Yangzi delta region of China and 200 control group individuals from the same cities. To capture the multiple dimensions of strategic behavior, we used three different games to observe aspects of cooperativeness (Prisoner's Dilemma), coordination (Battle-of-the-Sexes) and anti-coordination (Chicken). We also included incentivized elicitations of beliefs about others' choices, asking the subjects to guess the behavior of others in their respective group.

We contribute to the literature along many dimensions. By studying behavior in several games where efficiency and the Nash prediction under selfish preferences differ, we put the conceivable mechanisms to a demanding test (ex ante), since it is not sufficient that a mechanism works in one particular context only; rather, it must prove to be effective in several. We also believe that we make a substantial contribution by using high quality samples. In contrast to earlier studies that use convenience samples (for the obvious reason that business leaders are difficult to recruit to perform experimental tasks), we use a stratified random sample and we exclude CEOs (e.g., self-employed) of firms with less than ten employees. Furthermore, the control group was sampled to match core demographics of the

CEOs such as income, age and gender—and not chosen merely for being easy to access (e.g., students). Finally, our samples are larger than those in earlier studies.

Our main result is that compared to the control group the average mixed strategy chosen by the CEOs in all games is closer to the efficient or social optimal strategy. The CEOs cooperated more in the Prisoner's Dilemma game and played less hawkishly in the Battle-of-the-Sexes and Chicken games. This result is significant in all games when we include control variables in our regressions. When calculating the expected earnings, the differences are substantial between the groups, with CEOs earning from 9 to 57 percent more than the control group in these games. That CEOs' expected earnings are substantially higher may not come as a surprise. After all, the CEO's job is to maximize profits. Remarkably, however, CEOs did not out-compete the control-group members by being smarter (in the narrow "rationalistic" textbook sense) or more selfish, but by being more cooperative and less aggressive. Furthermore, CEOs believed in significantly higher cooperation levels than the control group in the Prisoner's Dilemma game, though no significant belief differences were found in the other games. Finally, the CEOs' beliefs about others' behavior were also on average more accurate than the corresponding beliefs of the control group.

The aim of this paper is to study differences between CEOs and others in strategic decision making. We perceive the identification of underlying causal mechanisms as a natural second step and beyond the scope of the present paper. Nevertheless, our research design comparing the behavior of two distinct groups invites methodological questions about the subjects' background characteristics, their selection into the study and other factors that could hypothetically bias our results. We have therefore scrutinized our findings with a large battery of robustness tests exploring the influence of recruitment method, income differences, definition of CEO and other factors in section V.C. and in the supplementary material. Results of these tests all confirm our baseline findings.

II. RELATED LITERATURE

This paper connects to two different strands of research. First, there is a growing body of literature that explores how market activities and economic transactions shape individual behavior and preferences (see Bowles 1998 for a review). Some research in this area suggests that property rights and market integration play an important role in the development of

efficient and prosocial behavior (Heinrich et al. 2001),[4] which would lead us to think that CEOs—being more intensely involved with the market than others—should display distinct behavioral tendencies in this direction. On the other hand, it has also been observed that specific market mechanisms may trigger disregard for third parties, which is normally seen as anti-social (e.g., Falk and Szech 2013; Bartling, Weber and Yao 2015). Partly, these seemingly contradictory results are due to different definitions of prosociality, but they may also be associated with the different research methods used.[5] Economic transactions take place in very different market environments that can have diverse mediating impacts on individual behavior. In the 'idealized' competitive market where anonymous buyers and sellers transact, there is no obvious room for prosocial behavior, and this may encourage ethically questionable conduct (Shleifer 2004). In real world market environments, however, transactions are typically personalized and anonymity absent. Repeat transactions and cultivation of long-time business relations clearly represent the standard rather than the exception for corporate transactions. This is just as true for the US (Macaulay 1963) as for China (Nee and Opper 2012). Hence, this paper contributes to research on the potential impact of non-anonymous market activities by studying if and how experienced business leaders differ from people otherwise sharing the same cultural and local setting, but not the same extent of market exposure.[6]

Secondly, our study relates to literature about behavioral preferences of business leaders and entrepreneurs. This research area includes theories about why these groups should differ from other people (e.g., Kihlström and Laffont 1979; De Meza and Southey 1996; Van de Ven, Sapienza, and Villanueva 2007) and studies investigating whether such differences can be empirically established (e.g., Van Praag and Cramer 2001; Puri and Robinson 2007; Holm, Opper and Nee 2013; Hvide and Panos 2014; Åstebro et al. 2014; Koudstaal, Sloof and

[4] The finding by Ockenfels and Weimann (1999) that student subjects who grew up in socialist Eastern Germany contributed less in a public good game and showed less solidarity than similar subjects who grew up in market-oriented West Germany is in the same spirit.

[5] For instance, higher accepting rates in the ultimatum game in Henrich et al. (2001) are interpreted as cooperative and prosocial, whereas a higher accepting rate (at a given price) in the double auction in Falk and Szech (2013) increases the efficiency in terms of the monetary reward for the two bidders, but since the third party (the mouse) is worse off when a bid is accepted, it is interpreted as a sign of moral erosion. The method used by Henrich et al. (2001) is based on comparing behavior in experimental games of widely different groups in the field relying on the hypothesis that different habits and cultures "spill over" into the groups' behavior in the games. Falk and Szech (2013) and Bartling, Weber and Yao (2015) on the other hand induce different "institutional" setting in strictly controlled laboratory experiments of given and relatively homogenous subject pools.

[6] We use the term "potential impact" intentionally since we do not want to make strong claims about causality. This paper should be seen as a first step, to establish whether differences between CEOs and comparable people exist. If such differences exist, a natural second step would be to investigate the causal mechanisms involved.

Van Praag 2015). The latter literature is extensive, but typically focuses on personality characteristics such as risk and uncertainty preferences, overconfidence, locus of control and desire for achievement.

Only a few studies have explored CEOs' strategic behavior in controlled settings using incentivized games, where behavior is interactive and where the outcome predicted by the theoretical concepts of equilibrium and efficiency is clear.[7] If we use a 'generous' definition including not only CEOs but also high-ranking managers and professionals, we obtain a small set of eight studies on strategic behavior with similarities to the present one (see Table 1). These studies compare the behavior of business leaders under various definitions (e.g., CEOs, entrepreneurs, managers, self-employed) with control-group members (e.g., students, salary workers) in distinct controlled and incentivized strategic settings. Most closely related to ours is a study by Fehr and List (2004), who conducted a trust game experiment with CEOs in the Costa Rican coffee industry and undergraduate students. They found that the CEOs were more trusting and reciprocated more than the students. Hence, on average the CEOs' behavior was more efficient but further away from the (subgame perfect) Nash equilibrium.[8]

While the results of the studies listed in Table 1 naturally vary due to differences in design and subject groups, some general behavioral differences among the subjects can be noted. For one, the self-employed tend to be more willing to take decisions on their own (Cooper and Saral 2013; Masclet et al. 2009). Furthermore, managers are more willing to cooperate (in team production and in trust relations) than control subjects (Fehr and List 2004; Holm, Opper and Nee 2013; Montmarquette et al. 2004). However, Cooper and Saral (2013) detect no differences in free-riding.

[7] In line with the delimitations of Frechette's (2015) review, our study focusses not only on differences between groups but on whether or not the groups behave differently with respect to specific theoretical predictions. To create a close link between abstract theoretical concepts like Nash equilibrium and behavior is very difficult in studies of natural field behavior and necessitates the import of lab conditions (in terms of careful instructions, descriptions of games, monetary incentives etc.) to the subjects in the field.

[8] The observation that CEOs appear more trusting than other people receives additional support from Holm, Opper and Nee (2013). However, in the game used in that study, more trust does not automatically lead to a more efficient outcome. Furthermore, Batsaikhan (2016) finds that more trusting micro-entrepreneurs have higher sales volumes than less trusting ones, but makes no comparison between entrepreneurs and non-entrepreneurs.

TABLE 1. STUDIES ON STRATEGIC DECISIONS WITH BUSINESS LEADERS.

Paper	**Focus group**	**Comparison group**	**Game**	**Frame**	**Belief elicit.**	**Samp-ling**	**Main finding**
Cooper et al. (1999)	Managers and foremen in textile industry (N=150, China)	U. students (N=160, China)	Ratchet effect game	A + F	No	NR	Field context increases managers' but not students' strategic play
Cooper (2006)	Executive MBA students (N=19, USA)	U. students (N=20, USA)	Weakest link game	SA	No	NR	Exec. MBA students better at overcoming coordination failures
Cooper and Saral (2013)	SE (N=44, USA)	Students, alumni (N=140, USA)	Team production	A	No	NR	SE less willing to join team, no difference in free-riding
Elston, Harrison and Rutström (2006)	SE visitors at a convention (N=82, USA)	Non-SE visitors at a convention (N=90, USA)	Market entry game	A	No	NR	Part-time SE less willing to compete
Fehr and List (2004)	CEOs from coffee industry (N=76)	Students (N=126)	Trust game	A	No	NR	CEOs more trusting and trustworthy
Holm, Opper and Nee (2013)	CEOs from five different industries (N=700, China)	Subjects sampled to match CEOs (N=200, China)	Trust elicitation + Willingness to compete	A	No	SR	CEOs more trusting and more willing to compete
Masclet et al. (2009)	SE (N=14, France)	Salary workers and students (N=130, France)	Risk-taking decision on their own or in group	A	No	NR	SE pay more for taking decisions on their own
Montmarquette et al. (2004)	Managers from pharmaceutical company (N=36, France, Germany)	Students (N=72, Canada, France)	Team effort task	A	No	NR	Managers more cooperative than students

Notes: Abbreviations: A- abstract frame, F- field frame, SA- semi abstract frame, NR- non-random sample, SR- stratified random, U. – undergraduate, SE – self-employed).

Our study contributes to this literature in a number of ways. None of the above studies links behavior to general theoretical constructs (like Nash equilibrium or efficiency) across more than one game. By having three different games in our design, any theoretical

hypothesis about differences between CEOs and the control group is put to a much tougher test, since the set of theoretical mechanisms that are consistent with an observed pattern of differences shrinks the more potential differences we can observe.[9] This also means that we can examine whether a certain behavioral difference is game specific. When only studying one game, it is not possible to know whether any observed difference only concerns one type of behavior or reflects a systematic difference in efficiency or strategic thinking between CEOs and others.

We also make a methodological contribution by using a stratified random sampling technique for recruiting CEOs and the comparison group. By including CEOs from five different manufacturing industries, we reduce the risk of industry specific results, yet limit the risk of noise linked with different background conditions. Further, by excluding CEOs operating firms with less than 10 employees, we ascertain that our subjects are used to exercising strategic decisions that have a certain economic relevance. Many of the above studies use specific comparison groups (most often students) who differ significantly from the CEOs along multiple dimensions (e.g., age, professional experience, income). Admittedly, it is not easy to eliminate all such differences, but we have reduced the differences substantially by trying to match the CEOs in terms of age, gender, education and residential living area. The present sample is also larger than those of previous studies.[10] Finally, our study is the only one that elicits subjects' beliefs about others' choices, which allows us to identify to what extent behavioral differences are associated with different beliefs regarding others' behavior.

III. THEORY, MEASUREMENT AND HYPOTHESES

We analyze CEOs' decisions in three simple 2x2 games—Prisoner's Dilemma, Battle-of-the Sexes and Chicken (see Table 2)—to capture how they act in situations requiring cooperation, coordination and anti-coordination. These three games involve elements of strategic situations that are likely to be important and naturally occurring in the context of running a firm.

[9] It is common that several theoretical mechanisms can explain a given empirical pattern. For an informed discussion on possible mechanisms that can be confounded with efficiency, see Engelmann and Strobel (2004).
[10] The only larger sample of CEOs on incentivized strategic decision-making besides the present study is in Holm, Opper and Nee (2013), which is based on data from a study conducted in 2009 containing two strategic situations (in terms of trust and willingness to compete) and two non-strategic ones (risk and ambiguity). However, the objective there was to investigate differences between CEOs and a control group in behavior relating to uncertainty preferences. As a consequence the games in that study do not allow for a straightforward analysis of both efficiency and equilibrium.

Situations analogous to the Prisoner's Dilemma (henceforth denoted as PD) are common between the CEO and employees, where free-riding opportunities frequently co-exist with possible benefits of cooperation. Similar situations may emerge between firms horizontally, e.g., in terms of price-setting (collusion), recruitment and joint investments. The Battle-of-the-Sexes game (henceforth denoted as BSS) captures situations where subjects can act either hawkish or dovish, but where benefits can be secured from coordination.[11] These situations are likely to emerge in negotiations with upstream and downstream firms, where decisions on technology, location, and market linkage need to be coordinated. The Chicken game illustrates elements of situations characterized by anti-coordination where it is vital that both players do not choose the same strategy. As in BSS there are two pure Nash equilibria, one hawkish and one dovish strategy, but the out-of-equilibrium payoffs differ so that the worst outcome is if both play the hawkish strategy. 'Chicken-like' situations are likely to turn up, for instance, in market-entry decisions when there is only room for a limited number of firms or products.

TABLE 2. THE GAMES PLAYED.

(The payoffs to the subjects in Chinese Yuan, CNY).

Game		*Defect*	*Cooperate*
PD	*Defect*	100, 100	400, 50
	Cooperate	50, 400	250, 250
		Hawk	*Dove*
BSS	*Hawk*	0, 0	600, 400
	Dove	400, 600	0, 0
		Hawk	*Dove*
Chicken	*Hawk*	0, 0	650, 150
	Dove	150, 650	300, 300

[11] To simplify the presentation here and to underline similarities to the Chicken game, we call the strategy that can give its player the preferred equilibrium the 'hawkish' strategy. When presented to subjects the strategies were given neutral labels (see the Instructions in Appendix A8 in the Supplementary Material).

The games above have well-known Nash equilibria, which are presented in Table 3 below.[12] In BSS and Chicken there are obvious issues of coordination and without communication or some coordination device, the pure Nash equilibria are unattainable—which is why it is reasonable to expect that the players play a mixed strategy. We define the efficient or socially optimal strategy profile as the one that maximizes the expected sum of the players' payoffs. In PD this is given by the profile when both players cooperate. In BSS and Chicken, the socially optimal strategy profiles are given by the pure Nash equilibria; however, as just mentioned, these are unattainable without coordination devices. We therefore consider the socially optimal strategy under the given symmetry restriction to be that all players in a group or "culture" play the same mixed strategy.[13] In Table 3 we provide the socially optimal symmetric strategy (hereafter, SOSS) for the different games below. We define a group as more prosocial or efficiency-oriented than another if the group's average strategy choice is closer to the SOSS than for another group. This test will then indicate whether CEOs are more prosocial or efficiency-oriented than other people. Another related test is if CEOs are more 'strategic' than other people in that they are closer to the predictions of non-cooperative game theory under selfish preferences. Hence, by observing the same symmetry restriction as above, we claim that a group is more 'Nashian' the closer its average strategy choice is to the symmetric Nash equilibrium (hereafter, SNE).

TABLE 3. EQUILIBRIA AND SOCIAL OPTIMAL SYMMETRIC STRATEGIES (SOSS).
(Probabilities of Defect (PD) or Hawk (BSS and Chicken) for player 1 and 2.)

Game	Nash equilibria	SOSS
PD	(*1*, *1*)	(0, 0)
BSS	(1, 0), (0, 1), (*3/5*, *3/5*)	(1/2, 1/2)
Chicken	(1, 0), (0, 1), (*7/10*, *7/10*)	(1/5, 1/5)

Notes: The symmetric Nash equilibria (SNE) are in italics.

[12] It is well-known (e.g., Fehr and Schmidt 1999; Engelmann and Strobel 2004) that the Nash equilibrium prediction is contingent on the underlying (possibly social) preferences assumed. To simplify the presentation and theoretical conceptualization, we assume standard selfish materialistic preferences (i.e., players only care about their own payoff) when referring to Nash equilibrium and socially optimal outcomes.

[13] An alternative interpretation is that each pure strategy represents a player type in a population and that these types are mixed in optimal proportions in a polymorphic distribution. If these types are randomly matched, it would lead to the same expected payoff for the population as the one attained if all play the socially optimal symmetric mixed strategy.

For each game, we also elicit beliefs about others' choices. We use an incentivized elicitation technique where subjects are asked to guess the percentage choosing a given strategy for each game. The closer they are to the correct percentage the more they earn. There are thus two fundamental null hypotheses about the CEOs and the control group members (hereafter denoted as "CGs") to test empirically:

1) On average, the CEOs and the CGs choose strategies similarly in the different games.
2) On average, the CEOs' beliefs about others' behavior are similar to those of the CGs.

The framing of a game can affect behavior (Tversky and Kahneman 1981; for a review Levin, Schneider and Gaeth 1998). Increasing awareness of these framing effects has motivated many researchers to increase the "field content" that subjects are exposed to (Harrison and List 2004).[14] We investigate this link by presenting each game with both an abstract frame and also a field frame, which introduces the game as a business decision that should seem natural to the CEOs, without being too specific to be cognitively grasped by non-CEOs lacking managerial experience. Both frames were randomly assigned, with half of the subjects in each group receiving an abstract frame and half a field frame.[15] If our results are robust with respect to frame we can claim that the results generalize beyond the situational construct and decision domain.

IV. RESEARCH STRATEGY AND DESIGN

In this section we present the research strategy and design of our study in terms of tasks, treatments, sampling strategy and how the study was practically implemented. We also provide descriptive statistics and some background information introducing our research site.

IV.A. Tasks and Treatments

Initially, the subjects received general information about the tasks (available in Instructions) and payments. They were also informed that in some tasks they would play against another anonymous person, who was denoted as X. The CEOs got the information that X "is a CEO of

[14] In fact, Cooper et al. (1999) find that managers (in the textile industry in China) become more strategic when exposed to field frames than students. However, the result from Cubitt, Drouvelis and Gächter (2011) appears to go in the opposite direction indicating that experienced subjects tend to be less susceptible to framing.
[15] The descriptions of the frames are available in the Instructions.

a Chinese firm and is a Chinese citizen" and the CGs were informed that X "is a Chinese citizen".[16]

To mitigate potential order effects, the CEOs and control group were divided into six different treatment groups based on the order of the games and the frames so that each game with a given frame had the 1st, 2nd and 3rd position exactly once (see Table 4). Hence, each subject participated in six different tasks (three games and the belief elicitations) and one of these was randomly selected at the end of the experimental session as the money-earning task. By paying for only one task (a strategy choice in a game or a guess in a belief elicitation), we follow Blanco et al. (2010) to avoid the 'hedging problem' of the belief elicitations.

TABLE 4. DESIGN.

Treatment	**1**	**2**	**3**	**4**	**5**	**6**
Task						
1	CA	BSSA	PDA	CF	BSSF	PDF
2	CAG	BSSAG	PDAG	CFG	BSSFG	PDFG
3	BSSA	PDA	CA	BSSF	PDF	CF
4	BSSAG	PDAG	CAG	BSSFG	PDFG	CFG
5	PDA	CA	BSSA	PDF	CF	BSSF
6	PDAG	CAG	BSSAG	PDFG	CFG	BSSFG
#subjects	34	33	33	34	33	33

Notes: A treatment is a combination of tasks in a specific order. C-Chicken, BSS-Battle of the sexes, PD-prisoner's dilemma, A-abstract frame, F-field frame, G- belief elicitation.

The decisions in the three games were to choose between strategies 'A' and 'B'. In the abstract frame, not much more than the payoff information was added. In the field frame, three scenarios preceded the payoff information. The PD scenario involved the recruiting of

[16] Note these formulations may create 'in-group' feelings (e.g., Chen and Li 2009). However, since we do this for both CEOs and CGs, this should reduce the risk that differences are generated by group identity effects. Some readers might still worry that referring to a smaller group may create stronger group identity effects among CEOs. While this is a possibility, we show in the robustness check (section V.C.) that this does not seem to drive our results.

trained workers; the Battle-of-Sexes was described as a matter of selecting one out of two trade fairs where it was crucial that a firm X with a complementary good should be present; and the Chicken game was described as a market entry situation involving a market with limited capacity. The belief elicitation tasks were to guess the percentage of other players who chose either strategy in the game they had just made a decision in. The closer the subject's guess was to the observed frequency, the higher the earnings.[17]

To be able to pay out cash rewards on the spot immediately after the experimental tasks, we obtained choices from a small additional group of 11 CEOs and another small group of nine control group subjects who took the role as X persons in the experiment before we approached the 200 CEOs and 200 CGs in the main study.[18]

IV.B. Sampling and Descriptive Statistics

CEOs are difficult to recruit for time-consuming academic studies. Many studies of CEOs have for this reason focused on self-employed individuals or on 'convenience' samples (see Table 1). These selection methods are understandable in practical terms, but issues of selection biases naturally raise concerns over the external validity of findings (Levitt and List 2007).[19] We were able to mitigate some of these problems by appending our experiment to a multi-year research project already in progress since 2006 in the Yangzi delta region utilizing a stratified random sample of CEOs running sizeable industrial firms (Nee and Opper 2012 pp. 52-70).

CEOs are sampled from firms stratified according to municipality, industry and firm size and selected from two of the region's municipalities (Shanghai and Wenzhou).[20] Our plan

[17] To limit the cognitive load and due to time constraints we used a simple scoring rule rather than a proper continuous scoring rule like the quadratic one. Subjects earned 500 CNY if they were +/- 2 percentage points from the correct answer; and gradually less the further away the answer was from the correct one. While such a simplistic scoring rule may tilt beliefs slightly away from true beliefs, they should do so in the same way for all subjects. The choice of scoring rule should therefore be unproblematic in studies like ours where the main focus is not point predictions but between-subjects comparisons. Simplistic scoring rules for beliefs are not uncommon in the experimental literature; see, e.g., Gächter and Renner (2010).

[18] The behavior of the X subject is of no interest to the study, but is necessary to avoid deception of the subjects in the main study. Some information given this group was adapted to their role (e.g., that they got paid after the main study was finalized). To test the design, we also had 39 additional CEOs who were matched to the 'XCEOs' in a pilot study. It was also the average behavior of the pilot group that was used when we calculated experimental earnings in the belief elicitation tasks in the main study.

[19] The self-employed individuals may be an interesting group for studying characteristics related to activities such as start-up strategies of very small businesses. However, this is not an ideal group to study strategic decision making for many reasons. Their experience of business culture and entrepreneurial activities is limited. One can also question whether they have been exposed to any forces of selection, since many self-employed are pushed to self-employment for lack of alternatives.

[20] Shanghai is well-known to readers as the largest city proper in China and as a global financial center. The diversity of private and state owned firms is substantial in Shanghai and so is the presence of foreign firms.

was to recruit 100 CEOs and 100 CGs from each city, but due to a coordination problem we obtained only 99 CEOs in one city (Shanghai), which leaves us with a total of 399 participants.[21] The sample includes only firms that have survived for at least three years. Their industries range from labor-intensive to technology-intensive, and include textile, ordinary machinery, vehicle and auto parts, medical and pharmaceutical products, and computer and communication equipment. To reach sizable establishments, we over-sampled 'large' (more than 300 employees) and 'medium-size' (100-300) firms. The CGs were randomly selected from household registers to match the CEOs with respect to gender, age, education. To get a reasonable match with respect to income, we added the restriction that CG subjects should live in the residential areas where the entrepreneurs themselves lived. In this way, we avoided having a very select control group (for instance, a specific group of highly paid professionals), and we avoided having a random sample of people who differ very much from the CEOs. CEOs participating in this study were recruited into the sample in 2006, 2009, and 2012, respectively, with an average response rate for Shanghai reaching 37.7% and for Wenzhou 31.7%.[22] Since only 30 of the 199 CEOs were first time survey-participants, we were able to conduct extensive quality checks for consistency of personal background information provided in prior survey waves. The average response rate among the CG subjects sampled in 2012 in both cities was 66.3% (73% in Shanghai and 58% in Wenzhou).[23] Most of the CEOs were also founders (83%) and/or owners (91%) of the firm, which means that the results from this study hold almost equally well for more restrictive definitions of "entrepreneurs" versus the CGs. The high representation of owner-CEOs also implies that these individuals were not 'recruited' or selected to match a certain expected managerial behavior or firm strategy. The sample mean in both cities is close to the national average of private manufacturing firms in terms of firm size, with an average of 129 employees compared to the national average of 121 employees, and the mean book value of assets reaching CNY 22.37 million compared to the

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Wenzhou is a municipality of more than 9 million people located in Zhejiang province, which borders Shanghai to the south. The city achieved national and international fame as one of the early developers of a private firm economy in China. Just as those in Shanghai, private firms in Wenzhou are active participants in the country's rapidly expanding export market and are fully integrated in national and international trading networks (Nee and Opper 2012 for more details).

[21] Three hundred additional CEOs were recruited from three other cities and will be used in a within-subject/within-firm study in a different paper. Budgetary concerns did not allow for recruitment of control groups in these cities. Consequently, these CEOs are not included in the present study.

[22] CEOs recruited before 2012 had participated in one or two earlier "waves" which did not focus on strategic behavior in games. For Shanghai 65 of the CEOs were recruited in 2006, 20 in 2009 and 14 in 2012. For Wenzhou 58 of the CEOs were recruited in 2006, 26 in 2009, and 16 in 2012. It can be noted that the average levels of response rates in this study are in line with other surveys studying management behavior (Baruch 1999).

[23] One might worry that this slight difference in recruitment methods might bias our results. This aspect is addressed in the robustness check in section V.C.

national mean of 20.66 million. The average profit in our sample is CNY 4.18 million, which is somewhat smaller than the national average of 5.5 million but above the regional average (comparison data from China Statistical Yearbook 2011).

Table 5 summarizes the descriptive statistics for the 399 participants in our study according to gender, age, income and education.[24] The matching of gender and age in the control group worked well. Our strategy to recruit from the same residential areas as the CEOs themselves lived was rather successful. The average household income of the entrepreneurs is—as can be expected—more than twice as high compared to the average of the control group. While this is a large difference, it would be much larger without residential selection of the control group.[25] To minimize the risk that income is driving the results we will complement our basic group comparison analysis with regressions where we control for income. Finally, it can be noted that there is virtually no difference in education between the two groups.[26]

TABLE 5. DESCRIPTIVE CHARACTERISTICS OF THE SUBJECTS.

Variable	**CEOs**	**Control Group**
Gender (proportion Males)	.85 (.36)	.82 (.39)
Age (year, mean)	45.73 (7.80)	41.30 (6.80)
Yearly household income (million CNY, mean)	.55 (.47)	.24 (.25)
Years in School (mean)	13.63 (3.22)	13.84 (2.78)
Number of Observations	199	200

Notes: Standard deviations in parentheses.

[24] These are standard demographic variables often controlled for in empirical studies. There is also evidence that these variables may matter for incentivized strategic behavior. Earlier research suggests that gender affects social and competitive preferences as well as risk preferences (Croson and Gneezy 2009; Dohmen et al. 2011). Education and age have been reported to matter for trust, cooperation and ultimatum game behavior (Glaeser et al. 2000; Güth et al. 2007 and Thöni et al. 2012). A subject's income will affect the salience of experimental earnings and the stakes that a subject confronts. Stakes have been demonstrated to affect strategic behavior in ultimatum games (Andersen et al. 2011).

[25] In a previous study (Holm, Opper and Nee 2013), where the control group was just randomly selected from the household registers in the same cities as the entrepreneurs, the median income of the entrepreneur was eight times higher than that of one of the CGs.

[26] When the CGs were just randomly selected from the household registers in the same cities as the CEOs, the latter group had significantly more years of education (Holm, Opper and Nee 2013). In Appendix 3 we provide additional detailed information on the matching between the CEOs and the CGs.

IV.C. Conducting Experiments in China: a Comment

All countries possess specific attributes relating to culture, politics and history, which motivate caution when drawing general conclusions as to behavioral differences between CEOs and other people. However—cultural and political differences aside—with economic transition towards a capitalist economy nearly completed, managers of private firms in China face the same challenges as firms anywhere else in the world (Lardy 2012). All firm managers have to organize resources through market exchange, coordinate decisions, cooperate under various forms of uncertainty and compete in a highly competitive market economy. Hence, although there is some evidence that management quality may differ among countries (Bloom, et al., 2012), there is no reason to assume that Chinese CEOs are substantively different from CEOs elsewhere in terms of their reliance on and familiarity with strategic decision making in competitive market settings.[27]

Some historical particulars of China may even be regarded as an advantage in a study of business leaders. First, the history of capitalism in China is relatively brief, which means that our group of CEOs belong to a generation that has intentionally earned its position by founding their own firms.[28] In this respect they fit fairly well the original idea of entrepreneurship and exposure to market forces as observed in the rise of modern capitalism in the West (Schumpeter 1942).[29] Second, the income of CEOs in successful firms in China is relatively low from an international perspective, which makes it possible to provide salient incentives in the games and belief elicitations at a reasonable cost. Though even moderately successful CEOs are a high-income group in China, their median annual family income in our sample was only around USD 75,000 (according to the exchange rate 6.38 CNY/USD in August 2012). The average subject in our experiment earned 247 CNY (or USD 39) on the behavioral tasks that took only 18 minutes on average, which corresponds to an hourly earnings of USD 130.[30]

[27] Most of the CEOs and the CGs have spent some time at a university. It is therefore relevant to note that in one of the most ambitious studies on differences in strategic decision making among students from (16) different countries, the Chinese students did not stick out in any respect. On the contrary, in the public good games they played, the Chinese students were relatively close to the average behavior in contributions, punishments and in antisocial punishments (Hermann, Thöni and Gächter 2008).

[28] Before 1988, private entrepreneurship was not even legalized, and full constitutional recognition was not granted before 2004.

[29] China's government has not implemented any top-down policies aimed at actively promoting private start-up firms. To the contrary, private firms are disadvantaged relative to the state-owned enterprises, which benefit from government policies and loans from state-owned banks. Rather the development of China's private entrepreneurs can be described as a bottom-up process (Nee and Opper 2012).

[30] This translates to an average hourly experimental earning of around 220 USD if we correct for purchasing power according to the Big Mac index (which was 1.68 in January 2014).

IV.D. Execution

A key to recruiting very busy people to a study like this is to make it easy to participate and to be persistent. We therefore turned to the Shanghai-based Market Survey Research Institute to work with a group of 20 professional interviewers, each with multiple years of field experience, to meet the subjects when and where it was convenient for them.[31] For the CEOs, the interviews and experimental tasks were conducted at the firm site, usually in a conference room or at the CEO's private office, by a team of two interviewers. The CEOs were first asked questions about their background (education, demographics) and the firm (start-up capital, firm revenues, etc.). The CGs were visited by the interviewers at their private residence where they were asked the same set of questions, except for those about the firm and business. Each subject was then presented with the three games and the belief elicitation tasks. Afterwards, one task was randomly selected as the money-earning task. The earning was calculated and the subject received the payment.

All interviewers selected for the implementation of the experiment were familiar with the local dialect and participated in a two-day training program (April 12-13, 2012) led by the authors of this paper in order to standardize the implementation of the tasks and interview. They also received detailed written instructions and questionnaires for each task. At the end of the training, the authors accompanied teams of interviewers and supervisors to the field to conduct a series of trial experiments to check and test the design and implementation. To fine-tune the design we also ran a pretest on 39 CEOs before the main experiment. The behavior of this pretest group was used when we rewarded subjects in the belief elicitation. The main experiment took place during a period of about four and half months, starting with the first subject on August 25, 2012 and ending with the last subject on January 9, 2013.

V. RESULTS

In this section we report observations of the subjects' behavior on the experimental tasks. We start with the strategy choices in the games, after which we analyze the subjects' beliefs.

[31] If a CEO had to cancel a meeting, the assistants would try to reschedule it at some other time. This is one reason that it took these 20 assistants over four months to collect the data.

V.A. Behavior in the Games

We present the average behavior in each game for the CEOs and the CGs separately. We also distinguish between the groups which receive the abstract and field frames, respectively.

Results presented in Table 6 show significant differences between the CEOs and the CGs in terms of strategic choices. The differences are also substantial in percentage points, ranging between 12 percentage points and almost 25 percentage points in one game. Clearly, the CEOs are significantly more cooperative in PD and play significantly less hawkishly in BSS and Chicken. This suggests that null hypothesis 1, stating that on average the CEOs and the CGs will choose strategies similarly in the different games, can be rejected. However, to reach a final conclusion we need to confirm that the observed differences between the groups are not due to confounding effects. We return to this concern in the following sections where we present a set of estimation models accounting for the most likely confounding effects.

TABLE 6. AVERAGE PERCENTAGE PLAY OF STRATEGIES IN THE GAMES.

Game and Frame	CEOs: Average playing Defect or Hawk	CGs: Average playing Defect or Hawk	Difference from SNE CEOs/ CGs	Difference from SOSS CEOs/ CGs
PDA**	44.6 (101)	59.4 (101)	55.4/40.6	44.6/59.4
PDF*	39.8 (98)	52.5 (99)	60.2/47.5	39.8/52.5
BSSA**	62.4 (101)	75.2 (101)	2.4/15.2	12.4/25.2
BSSF***	61.2 (98)	79.8 (99)	1.2/19.8	11.2/29.8
CA***	48.5 (101)	73.3 (101)	21.5/3.3	28.5/53.3
CF**	56.1 (98)	69.7 (99)	13.9/0.3	36.1/49.7

Notes: The suffix letter in the game acronyms indicates frame: A-abstract, F-field. Number of observations in parentheses. Significance levels in Chi-square tests, *- p-value< 0.1; **- p-value< 0.05; ***- p-value< 0.01.

Let us first characterize how the groups differ with respects to the theoretical concepts. Neither symmetric Nash equlilibrium (SNE) nor socially optimal symmetric strategy (SOSS) give point predictions that consistently and accurately predict the groups'

behaviors. The CEOs are close to the SNE in the BSS and the CGs are close to the SNE in Chicken, but in PD, both groups are far from the SNE.[32] Hence, the groups alternate in being close to the SNE, and the CGs are closer to the SNE in four out of six versions of the games. We therefore cannot convincingly state that CEOs and the CGs differ in how they behave in playing SNE. In fact, nothing in the data suggests that the CEOs are "more" consistent with the standard textbook predictions of economics (based on selfishness and Nash equilibrium) than are the CGs. This may surprise some.

What is more interesting is that the CEOs are closer to the SOSS in all games, independently of the frame. The field frame appears to make the difference larger between the two groups in PD and BSS, but not in Chicken where the opposite is the case. Taken together, this provides strong evidence that CEOs make more efficiency oriented choices than CGs.

Regression Analysis

In Table 7 we present marginal effects from logistic regressions where we control for demographic variables considered important in the literature, such as gender, education, age and income (Glaeser et al. 2000; Güth et al. 2007; Croson and Gneezy 2009; Andersen et al. 2011; Dohmen et al. 2011; Thöni, Tyran and Wengström 2012).[33] We also control for location (Shanghai) to take into account possible cultural differences between both municipalities.

All results presented in the previous section appear robust. The CEOs are more cooperative in PD and less hawkish in BSS and Chicken compared to the CGs, even when we control for conceivable confounds. The main variable of interest is the dummy variable CEOs, which is significant for PD and BSS at the 5% level and at 1% for Chicken. The direction is the one expected from the previous analysis. Given how the variables are defined and the average behavior of the groups, a negative sign implies an average behavior closer to SOSS and thus a higher degree of efficiency orientation. All effects are substantial. Keeping all other variables at their averages, the probability for defection in PD decreases by 0.12 when a CEO makes the strategic choice compared to the probability for defection by the CGs. The

[32] The fact that SNE does not point predict one shot behavior in PD is in line with many other studies using different subject groups (e.g., Kagel and Roth 1995).

[33] Note that the effects of these variables could either be direct or indirect. For instance, education might correlate with cognitive ability and gender with risk aversion which indirectly can affect the behavior in the strategic games. Note, even if we have matched our sample groups insofar as possible with respect to these variables, there is still individual variation that might correlate with the dependent variable.

probabilities (for Hawk) in BSS and Chicken are even further reduced, namely by 0.13 and 0.18. The implication is that the CEOs more often than the CGs end up in coordinated outcomes.

TABLE 7. BEHAVIOR: MARGINAL EFFECTS.

	(1) Defect	(2) Hawk_BSS	(3) Hawk_Chicken
CEO	-0.120**	-0.128**	-0.179***
	(0.056)	(0.051)	(0.054)
Male	0.038	-0.074	-0.047
	(0.068)	(0.057)	(0.065)
Age	-0.001	0.004	-0.000
	(0.004)	(0.003)	(0.003)
School	-0.012	0.008	0.019*
	(0.011)	(0.010)	(0.011)
Income	-0.059	-0.148***	-0.024
	(0.077)	(0.057)	(0.067)
Shanghai	-0.010	-0.113*	-0.030
	(0.065)	(0.060)	(0.064)
Frame Abstr	0.062	-0.014	-0.021
	(0.051)	(0.047)	(0.050)
Wald chi2	12.630	25.288	19.745
Prob > chi2	0.082	0.001	0.006
Pseudo R2	0.024	0.048	0.039
N	399	399	399

Notes. Results from logistic regressions. Robust standard errors in parentheses, * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Except for the CEO variable, none of the other variables is consistently significant. Family income has a significant negative effect on hawkish behavior in BSS, which may reflect a higher degree of generosity or lack of care for the experimental money in this game. However, there is no significant income effect in the other games, suggesting that we should be cautious not to draw too strong conclusions from this observation.[34] We note that the frame is insignificant in all games, which suggests that the underlying game is more important for the behavior than how it is presented in this study.

[34] It can also be noted that if family income is interacted with the CEO variable the interaction term is insignificant for all games.

V.B. Beliefs

It is natural to ask how the observed behavioral differences can be explained. They may simply reflect differences in preferences as to outcomes. Another possibility is that players' beliefs about others' choices differ and that the subjects act optimally according to these beliefs with or without regard to social preferences. Since we elicited beliefs we can shed some light on these questions.

We start by presenting the descriptive statistics for the subjects in the belief elicitation tasks. We present the average percentage the subjects believed that the other players choose Defect or Hawk in the respective games. As before, we separate the groups according to the frame (abstract or field) they received.

TABLE 8. DESCRIPTIVE DATA ON BELIEFS.

Game and Frame	CEOs: Belief of average playing Defect or Hawk	CGs: Belief of average playing Defect or Hawk	Average deviation from SNE CEOs/ CGs	Average deviation from SOSS CEOs/ CGs
PDA***	46.3 (101)	54.2 (101)	53.7/45.8***	46.3/54.2***
PDF***	47.0 (98)	55.7 (99)	53.0/44.3***	47.0/55.7***
BSSA	57.2 (101)	60.0 (101)	14.1/15.8	15.3/17.9
BSSF**	56.8 (98)	62.8 (99)	12.6/12.9	14.0/16.3
CA	49.7 (101)	50.7 (101)	21.5/21.1	37.7/40.0
CF**	54.0 (98)	59.3 (99)	19.4/13.5***	37.0/42.8**

Notes. A-abstract, F-field. Number of observations in parentheses. Significance levels in the leftmost column concern differences in means in beliefs of Defect and Hawk between CEOs and CGs (t-tests). The 2nd and 3rd column contain the average percentages the subjects believed that the other players choose Defect or Hawk. Significance levels in the two rightmost columns indicate differences in mean deviation in beliefs from SNE and SOSS, respectively (t-tests). *- p-value< 0.1; **- p-value< 0.05; ***- p-value< 0.01.

From Table 8 it should be clear that, compared to the CGs, the CEOs on average believe that other subjects defect less and are less hawkish. Hence, the CEOs' beliefs about others'

behavior differ from the CGs in the same way as they play the games. This is a fairly consistent pattern and the difference in beliefs is significant in four out of the six tasks. The difference is especially strong in PD. These results indicate that null hypothesis 2, stating that on average CEOs hold beliefs about others' behavior similar to those of the CGs, can also be rejected.

To investigate how these beliefs about others' behavior relate to the theoretical concept of SOSS, we note the consistent pattern that the CEOs' beliefs are closer to SOSS in all tasks. This difference is significant for three tasks. When it comes to the closeness to SNE there is no consistent pattern. The beliefs of the CEOs and the CGs are on average almost equally close to SNE in BSS and Chicken when abstractly framed. When there is a significant difference, the CG's beliefs about others' choices are closer to SNE than those of the CEOs, which partly mirrors how the CEOs' beliefs about others' choices are closer to the SOSS.

Difference in Beliefs: A Regression Analysis

We now inspect whether these inter-group differences in beliefs about others' behavior are robust to the inclusion of the demographic variables introduced earlier. Since the dependent variable is proportional, we run a fractional response regression as suggested by Papke and Wooldridge (1996). The results from the regressions are presented in Table 9 in terms of so called average partial effects, which have a similar interpretation as linear regression coefficients without compromising the non-linear relationship (Gallani, Krishnan and Wooldridge 2016). The negative sign for the CEO variable indicates that the CEOs generally tend to believe that co-players defect less and play less hawkishly than the CG believe, even when we control for demographic factors. The variable is strongly significant in PD, but not significant in the other games. It can be noted that the frame appears to have affected beliefs in Chicken substantially, with the field frame inducing the players to form more hawkish beliefs. There are no other strong predictors of beliefs. The conclusion is that the difference in beliefs between CEOs and the CG is a robust finding in PD, and for this game we can firmly reject null hypothesis 2. For the other games the CEOs' beliefs appear somewhat less hawkish compared to the CGs', but the statistical relationships are too weak to reject null hypothesis 2 in these games. It is difficult to know exactly why this difference exists, but one possibility is that in PD the trade-off between self-interest and efficiency is more evident than in BSS and Chicken, where issues of coordination are also involved. The additional complexity in the

latter situations (e.g., that both SNE and SOSS consist of strictly mixed strategies) may blur the relationship between beliefs and behavior. We will return to this idea in the next section.

TABLE 9. BELIEFS: AVERAGE PARTIAL EFFECTS.

	(1) Belief_PD	(2) Belief_BSS	(3) Belief_C
CEO	-0.230***	-0.082	-0.047
	(0.051)	(0.051)	(0.045)
Male	-0.033	-0.029	0.016
	(0.065)	(0.068)	(0.056)
Age	0.002	0.001	0.001
	(0.003)	(0.003)	(0.003)
School	-0.003	-0.001	0.013
	(0.010)	(0.011)	(0.009)
Income	0.039	-0.100	-0.114*
	(0.084)	(0.078)	(0.063)
Shanghai	-0.089	-0.024	0.016
	(0.056)	(0.056)	(0.049)
Frame Abstr	-0.029	-0.028	-0.160***
	(0.045)	(0.046)	(0.041)
Wald chi2	25.762	9.177	28.258
Prob > chi2	0.001	0.240	0.000
Pseudo R2	0.006	0.002	0.005
N	399	399	399

Notes. Results from fractional response regressions. Belief_PD, Belief_BSS, Belief_C represent the subjects' belief of the proportion playing Defect (PD) and Hawk (BSS and Chicken), respectively. Coefficients represent average partial effects. Robust standard errors in parentheses, * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Beliefs and Behavior

Beliefs and behavior are tightly connected in most models of human decision-making. In addition, empirically detected tendencies such as false consensus bias (Ross, Green and House 1977) and willingness to appear consistent (Festinger 1957) make this connection even stronger, and call into question the direction of causation and whether behavior and beliefs can be treated as independent of each other. Nevertheless, the observed differences in

behavior between CEOs and GCs lead us to ask to what extent such differences can be explained by different beliefs.

The interaction between behavior and beliefs is not straightforward, but depends on underlying motivations and preferences. Hence, the individual response to a certain belief depends on preferences and the underlying model of behavior assumed. For instance, in PD, beliefs would never matter for a rational subject with purely selfish preferences since defection is then a dominant strategy. However, for an individual with inequity aversion (Fehr and Schmidt 1999) or fairness concerns (Rabin 1993) and only imperfect information about preference types, beliefs matter. Similarly, for conditional cooperators (Fischbacher, Gächter and Fehr 2001), beliefs about others are important and the same goes for norm abiders (i.e., people who act according to what they believe the norm to be).

Table 10 summarizes the results of the logit regression controlling for beliefs. The coefficients for CEO are still negative and significant for BSS and Chicken. In PD, CEO is not significant anymore, but the 'belief' variable is positive and significant, suggesting that subjects who believe that a high fraction of players will defect are more likely to defect themselves. Since CEOs have significantly 'lower' beliefs regarding defection, it is reasonable to assume that the significant behavioral differences in PD may be largely explained by differences in beliefs, whereas the impact of beliefs in the other two games is not powerful enough to explain the differences between CEOs and CGs. In BSS, believing that others are more likely to play Hawk increases the likelihood that subjects themselves play Hawk. The combinations of behavior and beliefs in PD and BSS are consistent with conditional cooperation and norm abiding behavior, whereas in Chicken beliefs do not significantly affect behavior. At the same time, we want to warn the reader not to draw bold conclusions regarding the causal relationship between beliefs and behavior. As acknowledged above, there are a number of well-known cognitive biases like the false consensus effect and self-serving beliefs that make the separation of beliefs and behavior highly intricate. Furthermore, Costa-Gomes and Weizsäcker (2008) demonstrate in a carefully designed experiment that players' actions are often inconsistent with their beliefs from a game theoretic perspective. Hence, players do not always best-respond to their own beliefs even if many

different preferences and decision models are assumed, and even if the players' beliefs are reasonably accurate.[35]

TABLE 10. BEHAVIOR AND BELIEFS: MARGINAL EFFECTS.

	(1) Defect	(2) Hawk_BSS	(3) Hawk_Chicken
CEO	-0.090	-0.116**	-0.182***
	(0.059)	(0.051)	(0.054)
Male	0.043	-0.074	-0.046
	(0.069)	(0.059)	(0.065)
Age	-0.002	0.005	-0.000
	(0.004)	(0.003)	(0.003)
School	-0.012	0.007	0.020*
	(0.011)	(0.010)	(0.011)
Income	-0.064	-0.132**	-0.031
	(0.082)	(0.057)	(0.068)
Shanghai	0.003	-0.109*	-0.029
	(0.066)	(0.059)	(0.064)
Frame Abstr	0.068	-0.008	-0.030
	(0.051)	(0.047)	(0.051)
Belief_PD	0.366**		
	(0.144)		
Belief_BSS		0.570***	
		(0.136)	
Belief_C			-0.141
			(0.151)
Wald chi2	18.557	39.055	21.028
Prob > chi2	0.017	0.000	0.007
Pseudo R2	0.036	0.085	0.041
N	399	399	399

Notes. Results from logistic regressions. Belief_PD, Belief_BSS, Belief_C represent the subjects' belief of the proportion playing Defect (PD) and Hawk (BSS and Chicken), respectively. Coefficients represent average partial effects. Robust standard errors in parentheses, * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

[35] For instance, in BSS the best response (if selfish materialistic preferences are assumed) is to decrease the probability of playing Hawk the more likely the subject believes that others (and hence the opponent play Hawk), but this is obviously not the case here, which at first sight is surprising, but less so in the light of the findings of Costa-Gomes and Weizsäcker (2008).

Accuracy of Beliefs

It is interesting to compare the accuracy of the CEOs' beliefs with the accuracy of those of the CGs. Accurate beliefs about others' behavior are essential in order to generate realistic business plans and profitable strategies for firms. Here it is important to stress that since the beliefs for CEOs concerned other CEOs, while beliefs for the CG concerned other countrymen, we are comparing the accuracy of beliefs in reference to different groups. Hence, the question posed is whether CEOs have developed behavior and systems of beliefs that make them more accurate in their predictions of other CEOs' strategic behavior than the CGs are in their predictions about the strategic behavior of the general population.

TABLE 11. AVERAGE DEVIATION FROM CORRECT BELIEFS.

Game and Frame	CEOs: Average difference between belief and actual value	CG: Average difference between belief and actual value
PDA**	12.4 (101)	16.0 (101)
PDF	15.7 (98)	15.7 (99)
BSSA**	14.8 (101)	19.3 (101)
BSSF***	13.1 (98)	18.9 (99)
CA***	13.4 (101)	23.8 (101)
CF	14.0 (98)	13.4 (99)

Notes. Number of observations in parentheses. Significance levels of t-tests of difference in means. *- p-value< 0.1; **- p-value< 0.05; ***- p-value< 0.01.

Table 11 shows the average deviation of the CEOs' and the CGs' beliefs from the respective groups' actual behavior. Since this can be interpreted as the average error, low numbers represent more accurate beliefs than high numbers. We see that the CEOs and the CGs are about equally accurate in PDF and CF, but that the CEOs are significantly more accurate in the remaining games. The difference in accuracy is most convincing when the

games are abstractly framed, where there is a significant difference in all games. Overall, this suggests that CEOs as a group are more accurate about other CEO's behavior than the CGs are about other people's behavior.

TABLE 12. DEVIATION FROM CORRECT BELIEFS: AVERAGE PARTIAL EFFECTS.

	(1) Error_PD	(2) Error_BSS	(3) Error_C
CEO	-0.131**	-0.280***	-0.253***
	(0.056)	(0.059)	(0.053)
Male	-0.058	-0.046	0.031
	(0.063)	(0.072)	(0.068)
Age	-0.001	0.004	0.001
	(0.003)	(0.004)	(0.003)
School	-0.009	-0.020*	-0.031***
	(0.010)	(0.011)	(0.010)
Income	0.170**	0.161**	0.131**
	(0.074)	(0.071)	(0.065)
Shanghai	0.060	0.065	0.132**
	(0.058)	(0.066)	(0.062)
Frame Abstr	-0.075	0.040	0.196***
	(0.048)	(0.052)	(0.049)
Wald chi2	12.712	25.226	48.587
Prob > chi2	0.079	0.001	0.000
Pseudo R2	0.004	0.009	0.013
N	399	399	399

Notes. Results from fractional response regressions. Error_PD, Error_BSS and Error_C represent the absolute value of the difference between the subject's belief and the group's average behavior in PD, BSS and Chicken. Coefficients represent average partial effects. Robust standard errors in parentheses, * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

To control for background factors, we ran fractional logit regressions where the error for each subject in the respective games is the dependent variable. Results presented in Table 12 confirm that CEOs are indeed significantly more accurate in all games when we control for these background factors. Hence, the results from the previous section are robust. It can also be noted that years of education—as indicated by the variable school—is negative in all

games and marginally significant at the 10% level in BSS and significant in Chicken. Thus, more educated subjects have more accurate beliefs about their co-players than less educated subjects, which seems reasonable. Income has a positive sign in all games and is significant or marginally significant in all regressions. One possible explanation for this is that people with higher incomes are somewhat less careful when they make their guesses, since the experimental pay matters less to them. Since CEOs have higher incomes than CGs, this also suggests that if the incomes were more even in these groups, the difference in accuracy levels would be even larger.

V.C. Concerns and Robustness Tests

We conduct a number of robustness tests to address other potential issues; specifically the definition of our focus group, potential noise linked with differences in the implementation strategies for CEOs and CGs, the treatment of extreme values, the potential influence of interviewer effects, and finally consideration of a more narrowly defined (ownership-based) specification of the CEOs.

The Definition of CEO and the Control Group

All our CEOs' positions are verified since they have all been visited at their respective firm. As mentioned earlier, we selected CGs who were similar to the CEOs in age, gender and education, and also lived in the same residential areas as the CEOs, assuring a comparable level of wealth and socio-economic status. Consequently, the CGs are more educated and have better jobs and higher incomes than the average Chinese person. To learn more about the CGs, we asked about their profession and found that 26% label themselves as administrative officers, 17% as technical personnel and 12% as ordinary workers. More importantly, the second largest group (21.5% or 43 subjects) label themselves 'enterprise directors' either in organizations labeled as 'private enterprise' or 'individual business'. Thus, this group can be considered self-reported CEOs. We decided not to include these subjects in the CEO group since our assistants did not visit them at their firms to verify that they actually were CEOs. Further, the category of 'individual business' is in China reserved for so-called household firms (*getihu*) with less than seven salaried workers, making it likely that these individuals are running relatively small enterprises of a different organizational character.

TABLE 13. BEHAVIOR: MARGINAL EFFECTS.

	(1) Defect	(2) Hawk_BSS	(3) Hawk_Chicken
CEO^{+}	-0.149**	-0.221***	-0.249***
	(0.059)	(0.049)	(0.053)
Male	0.042	-0.069	-0.040
	(0.069)	(0.056)	(0.066)
Age	-0.001	0.006*	0.000
	(0.004)	(0.003)	(0.003)
School	-0.009	0.013	0.026**
	(0.011)	(0.010)	(0.011)
Income	-0.038	-0.097*	0.017
	(0.076)	(0.056)	(0.071)
Shanghai	-0.026	-0.141**	-0.058
	(0.065)	(0.061)	(0.064)
Frame Abstr	0.061	-0.017	-0.024
	(0.051)	(0.047)	(0.050)
Wald chi2	14.567	34.870	28.198
Prob > chi2	0.042	0.000	0.000
Pseudo R2	0.027	0.072	0.056
N	399	399	399

Notes. Results from logistic regressions. CEO^{+} denotes the original CEOs plus the group defining themselves as enterprise directors. Robust standard errors in parentheses. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Our ambition to have a 'clean' sample of CEOs and 'conservative' tests motivated the decision not to exclude the potential 43 CG CEOs from the CG sample.[36] At the same time the CG sample is not a clean non-CEO sample with these subjects included. To test if our results are robust if we exclude these 43 CEOs from the CGs and include them in the sample of CEOs, we run regressions similar to the one reported in Table 7 above. In fact, the magnitude of the CEO coefficients increases for all games, and in BSS the significance level increases from the 5 % level to 1 % (see Table 13). In Appendix 1 (in the Supplementary

[36] Our tests are conservative in the meaning that if these CGCEO subjects behave similarly to the selected CEOs, any difference detected would be stronger or at least not weakened if we exclude these 43 from the CG group and add them the original CEOs.

Material) we report similar tests on differences in beliefs and differences of accuracy and find that the results are robust (see Table A1-A3).

Recruitment, Location and Group Identification Effects

The execution of the experiment for both groups differed in several ways: First of all, the location of the experiment was not identical. For practical reasons and to secure their participation, the CEOs 'played' the strategic games and made their choices in their workplaces, whereas CGs did so in their homes. This may raise the concern that the observed differences are caused by a 'location effect'. Furthermore, the recruitment of subjects to a meeting with the interviewers at a given location (home or workplace) may affect the composition of 'types' that are willing to participate. However, previous research does not suggest that making incentivized choices at different locations creates any substantial biases (e.g., Holm and Nystedt 2007; von Gaudecker, van Soest and Wengström 2012). Furthermore, the interviewers were trained to carefully follow the same instructions for the CGs as for the CEOs.

Second, there were subtle differences in the way the opponent was described, with the CEOs being informed that X "is a CEO of a Chinese firm and is a Chinese citizen", while the CGs were informed that X "is a Chinese citizen". Since both formulations may give rise to in-group emotions, we do not expect this to drive the differences in results. Still, it may be that referring to a more exclusive group creates stronger in-group emotions, which in principle can drive differences in results.[37] From social identity theory (Tajfel and Turner, 1979) and earlier experimental research, it is well-known that group effects can easily be generated (Chen and Li 2009) leading to more prosocial behavior towards in-group players than towards out-group players. The typical design where in-group effects appear pervasive is where subjects contingent upon some active choice (e.g., the choice of a picture) in an experiment are allocated to a salient group and where it is clear that there exists, relative to the subject, one or several out-groups. In our study the category of the other player is not induced by an active choice but given and rather general (e.g., an existing occupation and a citizenship), which means that it is not particularly salient. Furthermore, there is no

[37] If this was the fact, we still think that the observed differences in results would be interesting since it would suggest that the mere information that another anonymous player is a CEO shapes behavior and beliefs in the direction of efficiency.

suggestion that there exist any 'out-groups'. Consequently, we do not expect strong group effects in this case.[38]

While location and group identification effects are unlikely to drive our results, critics may still call for more direct empirical evidence alleviating these concerns. While both effects are typically difficult to control, we are fortunate to have the 43 CGCEOs who did their tasks exactly like the rest of the CGs, in their homes and received exactly the same information about their opponent. In addition, they were recruited into the study with the exactly same method as the rest of the CGs. Hence, we can focus our analysis on the CGs and let those 43 individuals take the CEO role. In this exercise we obviously press the data very hard since the number of observations is drastically reduced. Furthermore, these CGCEOs also include leaders of individual enterprises who are likely to run on average smaller firms and may thus be of a different 'quality' than our original verified CEO sample.

The regression results are presented in Table 14 and are surprisingly strong. All coefficients are negative, which is similar to our finding in Table 7. The CGCEO coefficient for PD is not significant but it is strongly significant for both BSS and Chicken. This test within the CG sample supports our earlier findings that CEOs play less "aggressively" than the non-CEOs. In Appendix 2 we also run regressions on these groups to check for differences in beliefs. We can reproduce the results that the CEOs believe that the other players defect less and play less hawkishly. Furthermore, the coefficients indicating how beliefs affect behavior are still significant for PD and BSS, and now the same coefficient is significant for Chicken as well. However, we cannot reproduce the result that the CEOs beliefs are significantly more accurate than the non-CEOs. Probably this finding is due to the fact that the accuracy of CGCEOs beliefs is measured with respect to how close their guesses are to the average behavior of the CG group and not the average behavior of the CGCEO group (or our original CEO group for that purpose). This suggests that while CEOs are better in predicting the average behavior of their own group, they are not necessarily better at predicting the average behavior of society at large, like the CGs.

[38] For instance, Charness, Rigotti and Rustichini (2007) did not find any group identification effect when the group was not salient and Fershtman and Gneezy (2000) found no in-group bias based on ethnic origin among Ashkenazic and Eastern jews in trust games in Israel. In fact, the findings in the latter study went partly against the standard hypothesis of social identity theory, since Jews of Eastern origin were less trusting towards their own group than towards Ashkenazic jews.

TABLE 14. BEHAVIOR: MARGINAL EFFECTS.

	(1) Defect	(2) Hawk_BSS	(3) Hawk_Chicken
CGCEO	-0.066	-0.419***	-0.359***
	(0.111)	(0.108)	(0.113)
Male	0.064	-0.097*	-0.082
	(0.096)	(0.059)	(0.071)
Age	-0.003	0.008*	0.014***
	(0.006)	(0.005)	(0.005)
School	-0.018	0.013	0.046***
	(0.019)	(0.016)	(0.018)
Income	-0.153	0.220	0.075
	(0.247)	(0.151)	(0.238)
Shanghai	0.107	-0.154*	-0.249***
	(0.095)	(0.084)	(0.084)
Frame Abstr	0.072	-0.051	0.046
	(0.072)	(0.059)	(0.065)
Wald chi2	6.130	20.383	17.990
Prob > chi2	0.525	0.005	0.012
Pseudo R2	0.025	0.114	0.088
N	200	200	200

Notes. Results from logistic regressions. CEO^{+} denotes the original CEOs plus the group defining themselves as enterprise directors. Robust standard errors in parentheses. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Extreme Values

Except for family income, the variables used in the regressions are either dummy variables or not characterized by distributions including extreme values that may affect results. In the case of income one may worry that the highest incomes might impact our result, since the highest family income among the CEOs is 3.5 million CNY, which is almost 9 times higher the median CEO income and 20 times higher than the median CG income. The highest CG family income is also relatively high (2 million CNY, which is more than ten times the CG median). To check if our results in Table 7 are robust to limiting the extreme values in family income distribution, we winsorize the family income variable. Consequently, we do a 98% and a 90% winsorizing. In the first case this means to setting the 1% bottom values equal to the value of the 1st percentile and the 1% top values equal to the value of the 99th percentile. With 90%

winsorization, it means the bottom 5% values are set equal to the 5^{th} percentile and the top 5 % percent equal to 95^{th} percentile. Tables A9 and Table A10 in Appendix A4 present the results confirming our previous results under 98% winsorization. The same holds under 90% winsorization with the exception that the significance level of the CEO variable drops from being significant at the 5% level to being marginally significantly at the 10% level in PD. We also conduct a robustness check on the results on beliefs, on behavior when beliefs are included and on the average deviation from the correct beliefs when income is subject to 90% winsorizing. The results remain robust (see Tables A11-A13 in Appendix A4).

Interviewers

In an ideal design, interviewers would be randomized among cities and among CEOs and CGs. However, the restriction that the interviewers should be able to speak the local dialect made it impossible to have the same interviewers in different cities. In addition, for logistic reasons, we had a group of subjects who were interviewed by interviewers who only interviewed either CEOs or CGs. When this is the case it is not possible to control for interviewer effects without causing multicollinearity. However, since the interviewers who interviewed only CGs also interviewed the 43 CGCEOs for whom we observed basically the same differences compared to the rest of the CGs (see the previous section), we think it is unlikely that interviewer effects are driving the results. We also provide a robustness check in Appendix 5 where no indication of serious interviewer effects is detected (see Tables A14-A16).

Founders, Owners and Entrepreneurs

Scholars interested in the role and decisions of entrepreneurs are likely to be interested to know whether our results also hold for a narrower specification of the focus group, namely CEOs who are the actual founder or owner of a firm. Such a definition may come closer to the classical concept of entrepreneurs. It is in founding a firm that the entrepreneur plays out the entrepreneurial function in devising new combinations of resources, organization of production, marketing and novel products (Schumpeter 1942). The focus on owner CEOs also rules out that individuals with a specific ‘strategic outlook’ were simply recruited into the role of a CEO. There is evidence based on large international data sets that family owned firms are

better managed if run by an external CEOs compared with similar firms run by members of the owner family (Bloom et al., 2012). To some extent a focus on owner-CEOs thereby tackles the question whether observed differences reflect a selection effect or are more likely to reflect 'learned' behavior in market exchange. To investigate if our main results on the differences in behavior between entrepreneurs and control group (see Table 7) also hold for stricter specifications, we run the same regression on the subsample of the 182 CEOs who are owners of firms they manage, and compare them to the sample of 157 CGs who do not define themselves as enterprise directors. The reason for excluding enterprise directors is that there is a relative high probability that subjects in this group also are owners or founders since so-called individual businesses are rarely operated by professional managers. We conduct the same regressions for the 166 CEOs who are founders or co-founders of their companies. The results are presented in Tables A17-A20 in Appendix 6. 'Owner' and 'Founder' are significant in all regressions and for all games. Thus, by and large, the results hold for this definition as well and are even strengthened in some cases. This also implies that the differences between the CEOs and CGs are not driven by a group of purely 'professional' CEOs who are likely to be selected for the specific position and who are more likely to have undergone strategic training at business schools than the owner-CEOs.

Competition and CEO Experience

Although, we make no claims of identifying causal mechanisms, some readers may be interested to know if factors in the environment of the CEOs' firms are correlated with their behavior. For instance, it is generally argued that collusion (i.e., horizontal cooperation) is easier and more profitable if the degree of competition is low than if it is high. In our firm survey we asked the CEOs to estimate the effect on sales by a 10 percent price increase. From this we get estimations on firm specific price elasticities that can served as proxies for the degree of competition. However, we do not find any evidence for a connection between the CEOs' behavior in the games and the degree of competition their firms face (see Table A21).

Our data set does not allow us to determine whether the behavioral differences between CEOs and the CGs are the outcome of a 'selection effect', an "experience effect" or a combination of both. However, since we asked the CEOs about the year they got their CEO position, we can use this as a proxy for experience and explore whether this is correlated with behavior. When we run the same regressions as used before but with this variable included we

find that the number of years as CEO has a negative coefficient in all games, suggesting that experience makes the CEO less prone to defection and hawkish behavior. However, the coefficient for the experience variable ('YearsCEO' in Table A22) is only significant for one of the games. This finding indicates that although the effect of experience of the CEOs appears not to be dominant, it should not be neglected as a potential driver of the observed behavioral differences in future studies.

VI. DISCUSSION AND IMPLICATIONS

Our findings raise a number of questions and have also important implications. These are discussed below.

VI.A. The Effect on Expected Earnings

When playing these strategic games, our group of CEOs differed from the CGs in strategic decision-making in behavior as well as beliefs, as we have shown. Furthermore, both their behavior and beliefs were closer to the socially optimal symmetric solution. Below, in Figure I, we have calculated the expected earnings for a pair of players assuming that both players play a mixed strategy equal to the groups' averages as given in Table 6. Since the CEOs' behavior is on average closer to the SOSS in all games, this means that the expected earnings of the average randomly matched pair of CEOs are also higher in all games compared to the earnings of the CGs. The differences in expected earnings are substantial with the largest difference being as much as 57 percent in Chicken (with an abstract frame) and not smaller than 9 percent (in PDF). If these differences reflect how CEOs and CGs interact in real strategic settings, then there exists a "CEO culture" of norms and beliefs generating substantial returns, not only to the CEOs' own firms, but also to society as a whole.[39]

Why are CEOs more oriented towards efficiency than other people? Answering this question is beyond the scope of the present study, but we can speculate as to some possible underlying factors. Conceivably, this tendency may be linked to market activity per se.

[39] We do not claim that choosing certain strategies in experimental games necessarily reflects how CEOs run their firms. It is possible that the game choices reflect personal attitudes, which are unrelated to the choices made for their firms. In any case the potential connection between game choices and firm characteristics and outcomes is an interesting empirical question that the authors plan to investigate in a separate paper. However, it is outside the scope of the present paper.

Virtually all transactions on private markets involve voluntary agreements of at least two parties, which means that such transactions are inherently prosocial and may generate—or may attract and reinforce—a mindset oriented towards identifying efficiency enhancing win-win solutions.[40] Another possibility may be related to the CEO's leadership role within an organization. To get support from employees and business partners it may be that social image is more important for a leader than for others. If this is the case and the CEOs bring this mindset to our experimental tasks, they would be more concerned than others with acting in a prosocial way (Benabou and Tirole 2006). Also, CEOs may generally give some attention to how their 'followers' react on being informed about their actions. If this is the case, the CEOs may be trained to lead 'by example' or 'by sacrifice' (Hermalin 1998), which can involve costly cooperative or non-hawkish actions to signal to their followers.[41]

VI.B. Implications for Institutional Development

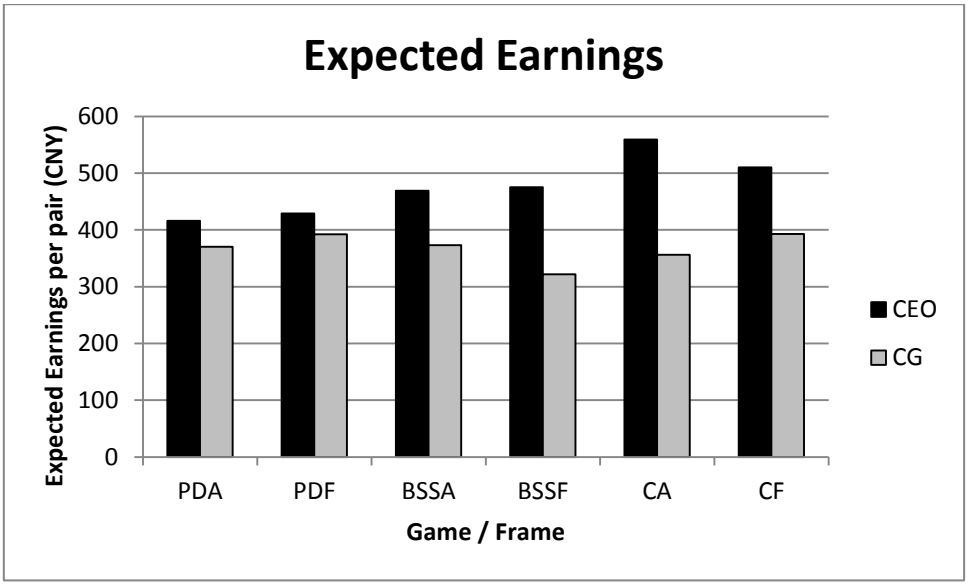
Our findings feed into to the literature on the interplay between institutions and moral values and norms, as has been analyzed by Bowles (1998). Key ingredients to a successful institutional structure are what Douglass North denotes as "informal constraints", which among other things, consist of "conventions and codes of behavior", including norms (North 1990/2007, p. 4). To explain the development of norms is a highly complex problem involving the interplay between formal rules and informal constraints. However, as North points out: "Even if we do not possess a good explanation for social norms, we can model wealth-maximizing norms in a game theoretic context. That is, we can test, empirically, what sorts of informal constraints are most likely to produce cooperative behavior…." (Ibid., p. 43). We follow this approach by using games to derive the socially efficient strategy profiles (i.e., in North's terminology the "wealth-maximizing" solutions). We then analyze the norms implicitly revealed by the strategy choices in these games that are made by subjects from two different environments or "cultures", those heavily active in private markets (the CEOs) and those who are less exposed to these activities (the control group).

[40] It should be stressed that our use of the term "prosocial" and win-win solutions only concerns the involved parties. We cannot say anything about potential prosocial behavior if a passive third party is affected by a negative externality, as in Falk and Szech (2013) and Bartling, Weber and Yao (2015).

[41] This mechanism has gotten support in experiments where one player is assigned the leader role and the other the follower role (Potters, Sefton and Vesterlund 2007).

Our results demonstrate behavioral and belief differences between the two groups. While we did not strive to identify a definite causal explanation, the findings open the way for hypotheses as to how private markets can affect soft institutions in a society. One can hypothesize that the "culture" with the most efficient choices generates a better breeding ground for efficient norms than the one with less efficient choices. Furthermore, if the members of the groups mainly interact with each other then the efficiency oriented culture is likely to grow faster than the other culture and to "export" wealth-creating norms to the rest of the society.[42]

FIGURE I. EXPECTED EARNINGS FOR A RANDOMLY MATCHED PAIR.



We find that the group more heavily involved in private market activity is also the most efficiency oriented. This could imply that a small private market sector generating efficient informal constraints and within-group norms of cooperation can shape institutions in the rest of the economy over time. The finding in this paper may provide one linkage to our

[42] This efficiency orientation among private CEOs is likely to be transmitted to actors in the surrounding society, both because its relative success may stimulate others to imitate their strategies, and also because as the private sector grows in importance, its leaders have the ability and power to persuade others in accepting their own norms and values (e.g., politicians, bureaucrats employees).

understanding of how economic institutional development can be "channeled" through private markets in transition economies such as China.[43]

VII. CONCLUSION

As the health of most economies depends on the aggregate behavior of their business leaders and CEOs, it is a crucial task for economic theory to understand and predict the behavior of these individuals. Equally important, it is of interest to learn in what way CEOs may influence the norms in the societies they live in. This question can be related to the broader debate as to how private markets and a frequent reliance on market exchange affect norms and values.

We investigate whether the strategic decision-making of private-firm CEOs in well-defined games differs from that of other comparable subjects, in what we believe to be the most ambitious study of CEO's behavior in strategic games thus far. For this research, we recruited a stratified random sample of 199 CEOs and a carefully selected sample of 200 control group members to participate in three incentivized strategic games, the Prisoner's Dilemma, the Battle-of-the-Sexes, and the Chicken game. We detected substantial differences in behavior between the CEOs and the control group, but not in the way many would expect. The CEOs were not in general closer to the Nash equilibrium prediction (assuming selfish preferences). On the contrary, the average control group behavior was closer to the Nash equilibrium in the majority of the games. The most striking and consistent pattern was that the CEOs were closer to the socially optimal strategy profile in all games. This means that the CEOs cooperated more and played less hawkishly compared to the control group, no matter how the game was framed (abstractly or with a narrative). The CEOs' beliefs about others' choices were also closer to the socially optimal strategy profile and also on average more accurate than those of the control group, although the accuracy finding appeared to be group specific. These surprisingly robust findings, open up the possibility that private markets provide a fertile ground whereupon the leaders are selected for and also foster efficiency oriented norms and values in a bottom-up process. We hope that these findings may inspire future studies to more directly explore how the "executive culture" in private markets affects the economy and its institutions.

[43] Nee and Opper (2012) argue that much of the recent institutional change in China is a bottom up process, driven by private entrepreneurs. This conclusion is supported by a multitude of historical facts, registry data and observations from interviews. A more formal agent-based model of this bottom-up process is offered in DellaPosta, Nee and Opper (2016).

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APPENDICES

Content

A1: The Definition of the CEO and Control Group (CG): Robustness tests of Beliefs

In Table A1 we report the robustness test for differences in beliefs when the "CGCEOs" are taken out from the CGs and included in the group of CEOs. The observed difference in PD is still significant at the same level whereas the difference in beliefs in BSS now becomes significant at the 5%. Hence, differences in beliefs are reinforced when we redefine our comparison groups in this way.

TABLE A1. BELIEFS: AVERAGE PARTIAL EFFECTS.

	(1) Belief_PD	(2) Belief_BSS	(3) Belief_C
CEO^{+}	-0.310***	-0.115**	-0.040
	(0.053)	(0.055)	(0.047)
Male	-0.025	-0.026	0.016
	(0.064)	(0.068)	(0.056)
Age	0.003	0.001	0.001
	(0.003)	(0.003)	(0.003)
School	0.004	0.002	0.014
	(0.010)	(0.011)	(0.009)
Income	0.088	-0.081	-0.116*
	(0.082)	(0.082)	(0.065)
Shanghai	-0.122**	-0.036	0.012
	(0.055)	(0.057)	(0.050)
Frame_Abstr	-0.032	-0.029	-0.161***
	(0.045)	(0.045)	(0.041)
Wald chi2	40.431	11.613	27.819
Prob > chi2	0.000	0.114	0.000
Pseudo R2	0.009	0.003	0.005
N	399	399	399

Notes. Results from fractional response regressions. Belief_PD, Belief_BSS, Belief_C represent the subjects' belief of the proportion playing Defect (PD) and Hawk (BSS and Chicken), respectively. CEO^{+} consists of the group of the original CEOs plus the group defining themselves as enterprise directors. Coefficients represent average partial effects. Robust standard errors in parentheses, * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

In Table A2 we report regressions including beliefs. The main results are robust (i.e., that the coefficient for beliefs is significant in PD and BSS). One small change is that CEO is now marginally significant in PD even if we control for beliefs.

TABLE A2. BEHAVIOR AND BELIEFS: MARGINAL EFFECTS.

	(1) Defect	(2) Hawk_BSS	(3) Hawk_Chicken
CEO^{+}	-0.110*	-0.209***	-0.252***
	(0.064)	(0.049)	(0.053)
Male	0.046	-0.070	-0.039
	(0.070)	(0.058)	(0.066)
Age	-0.001	0.006*	0.000
	(0.004)	(0.003)	(0.004)
School	-0.009	0.012	0.027**
	(0.011)	(0.010)	(0.011)
Income	-0.051	-0.080	0.010
	(0.083)	(0.055)	(0.073)
Shanghai	-0.010	-0.136**	-0.057
	(0.066)	(0.060)	(0.065)
Frame_Abstr	0.067	-0.012	-0.033
	(0.051)	(0.047)	(0.051)
Belief_PD	0.342**		
	(0.147)		
Belief_BSS		0.553***	
		(0.137)	
Belief_C			-0.147
			(0.155)
Wald chi2	19.905	46.281	30.310
Prob > chi2	0.011	0.000	0.000
Pseudo R2	0.037	0.106	0.058
N	399	399	399

Notes. Results from logistic regressions. Belief_PD, Belief_BSS, Belief_C represent the subjects' belief of the proportion playing Defect (PD) and Hawk (BSS and Chicken), respectively. CEO^{+} consists of the group of the original CEOs plus the group defining themselves as enterprise directors. Robust standard errors in parentheses, * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

The higher accuracy of the CEOs beliefs is also robust to this redefinition of the subject groups (Table A3). In this case, the CEO coefficient is significant at the 1% level for all games. The redefinition increases the magnitude of the coefficient in PD but decreases it in BSS and Chicken.

TABLE A3. DEVIATION FROM CORRECT BELIEFS: AVERAGE PARTIAL EFFECTS.

	(1) Error_PD	(2) Error_BSS	(3) Error_C
CEO^{+}	-0.166***	-0.189***	-0.209***
	(0.055)	(0.063)	(0.057)
Male	-0.054	-0.044	0.033
	(0.062)	(0.072)	(0.068)
Age	-0.000	0.002	-0.000
	(0.003)	(0.004)	(0.003)
School	-0.004	-0.013	-0.024**
	(0.010)	(0.010)	(0.010)
Income	0.190***	0.126*	0.118*
	(0.072)	(0.076)	(0.068)
Shanghai	0.042	0.043	0.108*
	(0.058)	(0.067)	(0.062)
Frame_Abstr	-0.076	0.037	0.196***
	(0.047)	(0.053)	(0.049)
Wald chi2	16.228	11.716	39.740
Prob > chi2	0.023	0.110	0.000
Pseudo R2	0.005	0.004	0.011
N	399	399	399

Notes. Results from logistic regressions. Error_PD, Error_BSS and Error_C represent the absolute value of the difference between the subject's belief and the group's average behavior in PD, BSS and Chicken. CEO^{+} consists of the group of the original CEOs plus the group defining themselves as enterprise directors. Coefficients represent average partial effects. Robust standard errors in parentheses, * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

A2: Location effect and In-Group feelings: Robustness tests

In this section we present regressions on beliefs where we compare the behavior of the 43 CGCEOs against the rest of the control group. In line with the original sample we find statistically significant differences in beliefs in the same direction when we compare the CGCEOs with the other CGs (Table A4). CGCEOs believe that their opponent is less likely to defect (strongly significant) and less likely to play hawk (strongly significant in BSS but not significant in Chicken). Thus, with this new categorization and with only half the number of observations we are able to reproduce our main results on differences in beliefs.

TABLE A4. BELIEFS: AVERAGE PARTIAL EFFECTS

	(1) Belief_PD	(2) Belief_BSS	(3) Belief_C
CGCEO	-0.308***	-0.157**	-0.059
	(0.076)	(0.076)	(0.062)
Male	0.031	-0.052	-0.046
	(0.090)	(0.087)	(0.070)
Age	0.012**	-0.001	-0.001
	(0.005)	(0.005)	(0.004)
School	0.013	0.014	0.027*
	(0.019)	(0.021)	(0.014)
Income	0.041	-0.034	-0.044
	(0.125)	(0.125)	(0.094)
Shanghai	-0.142*	-0.048	-0.117*
	(0.083)	(0.084)	(0.067)
Frame_Abstr	-0.025	-0.078	-0.223***
	(0.065)	(0.067)	(0.054)
Wald chi2	28.504	8.640	31.386
Prob > chi2	0.000	0.280	0.000
Pseudo R2	0.009	0.003	0.007
N	200	200	200

Notes. Results from fractional response regressions. Belief_PD, Belief_BSS, Belief_C represent the subjects' belief of the proportion playing Defect (PD) and Hawk (BSS and Chicken), respectively. CGCEO denotes the group of 43 subjects defining themselves as enterprise directors among the CGs. The non-CGCEOs consist of the rest of the CGs. Coefficients represent average partial effects. Robust standard errors in parentheses, * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

When we test for how beliefs affect behavior the main results remain robust, namely that the coefficient for beliefs is positive and significant in PD and BSS (Table A5). It can also be noted that in this subject group the coefficient for beliefs in Chicken is significant and negative. Hence, believing that a high percentage will play hawk in Chicken will decrease the probability the subject plays hawkish, which is in line with standard rational play assuming self-interested preferences.

We also test how accurate the CGCEOs beliefs are compared to the rest of the CGs. Here we cannot reproduce our previous findings. By inspecting Table A6 it should be clear that the CGCEO coefficient is far from significant and it does not have the same consistent negative sign as with the original sample. Given that this new categorization was able to reproduce almost all earlier results on behavior and beliefs, it is unlikely that this lack of consistency in result can be explained by location or in-group effects. It is also difficult to understand how in-group feelings should affect accuracy of beliefs. However, the accuracy of beliefs in the main text was measured in terms of accuracy with respect to the average behavior of each subject group (i.e., that of the CEOs and the CGs, respectively). Here, the accuracy in measured with respect to the average behavior of only one group, namely the CGs. In this sample the CGCEOs believe that others defect less and play less hawkish than the non-CEOs, which is also exactly how CEOs play themselves. This suggests that CEOs are not better to guess other people's behavior in general, but they seem better in predicting their own group's behavior compared to how good the CGs are to predicts their group's behavior.

TABLE A5. BEHAVIOR AND BELIEFS: MARGINAL EFFECTS.

	(1) Defect	(2) Hawk_BSS	(3) Hawk_Chicken
CGCEO	0.008	-0.384***	-0.381***
	(0.120)	(0.105)	(0.115)
Male	0.058	-0.085	-0.090
	(0.098)	(0.056)	(0.070)
Age	-0.006	0.010**	0.014***
	(0.006)	(0.004)	(0.005)
School	-0.022	0.008	0.052***
	(0.019)	(0.017)	(0.018)
Income	-0.170	0.204	0.066
	(0.279)	(0.135)	(0.243)
Shanghai	0.146	-0.146*	-0.276***
	(0.097)	(0.075)	(0.086)
Frame_Abstr	0.080	-0.028	0.014
	(0.073)	(0.054)	(0.068)
Belief_PD	0.628***		
	(0.211)		
Belief_BSS		0.558***	
		(0.143)	
Belief_C			-0.452**
			(0.211)
Wald chi2	14.374	29.619	22.468
Prob > chi2	0.073	0.000	0.004
Pseudo R2	0.059	0.172	0.106
N	200	200	200

Notes. Results from logistic regressions. Belief_PD, Belief_BSS, Belief_C represent the subjects' belief of the proportion playing Defect (PD) and Hawk (BSS and Chicken), respectively. CGCEO denotes the group of 43 subjects defining themselves as enterprise directors among the CGs. The non-CGCEOs consist of the rest of the CGs. Robust standard errors in parentheses, * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

TABLE A6. DEVIATION FROM CORRECT BELIEFS: AVERAGE PARTIAL EFFECTS.

	(1) Error_PD	(2) Error_BSS	(3) Error_C
CGCEO	-0.099	0.098	0.019
	(0.081)	(0.096)	(0.090)
Male	-0.087	0.083	0.096
	(0.077)	(0.103)	(0.095)
Age	0.002	0.002	0.003
	(0.005)	(0.006)	(0.006)
School	0.002	-0.032*	-0.044***
	(0.017)	(0.018)	(0.016)
Income	0.008	0.084	0.085
	(0.186)	(0.152)	(0.121)
Shanghai	-0.005	0.106	0.132
	(0.082)	(0.099)	(0.090)
Frame_Abstr	0.012	0.024	0.405***
	(0.062)	(0.076)	(0.071)
Wald chi2	3.536	5.473	48.201
Prob > chi2	0.831	0.602	0.000
Pseudo R2	0.001	0.003	0.024
N	200	200	200

Notes. Results from fractional response regressions. Error_PD, Error_BSS and Error_C represent the absolute value of the difference between the subject's belief and the group's average behavior in PD, BSS and Chicken. CGCEO denotes the group of 43 subjects defining themselves as enterprise directors among the CGs. The non-CGCEOs consist of the rest of the CGs.

A3: The Matching of CEOs and CGs: Some additional comments

We have provided evidence that the matching between the CEOs and CGs was relatively successful and that there are no serious indications of selection issues (see section IV.B and Appendix 2). However, there might still be concerns. One issue is that the different groups may differ in their willingness to participate, and that this may be associated with how they behave in the games. A second issue is even if the years of education is the same for our respondents (see Table 5) their education may be dissimilar in other respects. We will address these two concerns below.

Selection of cooperative CEOs:

A warning sign is that the response rate of the CGs was higher than the response rate in the CEO group (see section IV.B). If the more cooperative CEOs were more willing to participate in this study this could bias the results since even if the same selection mechanism affected the CGs, the higher response rate in the latter group would make the selection effect weaker. The difference in response rates between CEOs and CGs can depend on many things, like the location of the interview and/or the subject's cooperativeness. We cannot fully rule out the latter potential source of bias, but there are some indications that this might be less of a concern, which will be presented below.

First of all, one might suspect that there is a selection issue in that more busy CEOs may not participate, and that this group would differ in their behavior from the CEOs participating in the study (e.g., in being less cooperative). It is natural to assume that CEOs of larger firms are more busy than CEOs of smaller firms. It is therefore of interest to check if these groups differ in their behavior. We do this by comparing the size distributions of the firms (in terms of value of sales and number of employees) of those CEOs who choose defect

in PD, hawk in BSS and Chicken, respectively. However, in not one of the games is any size measure of the firms of the CEOs playing defect and/or hawk significantly different statistically from those CEOs' firms who did not play these strategies. In Table A7, we provide the p-values of two-sample Wilcoxon rank-sum tests. These results indicate that this potential selection issue appears to be of minor concern.

TABLE A7. FIRM SIZE DIFFERENCES CONTINGENT ON BEHAVIOR.

Measure of Size:	**Sales**	**Number of Employees**
Prisoner's Dilemma	0.734 (199)	0.521 (199)
Battle-of-the-Sexes	0.712 (199)	0.837 (199)
Chicken	0.974 (199)	0.660 (199)

Notes. P-values from two-sample Wilcoxon ranksum tests with the null hypothesis that the rank distribution of firm sizes is not contingent on CEO choices in the game. Number of observations in parentheses.

Second, even if the response rate of the CEOs interviewed at their firms differ substantially from the response rate of the CGs, the same is not necessarily true in the group of the CEOs who were interviewed in their homes (i.e., the CGCEOs described in Appendix A2) and for which our main results appear to hold. Among the CGs we do not have information on subgroups' response rates. However, there is no obvious reason to believe that the selection of cooperative subjects was stronger among the CGCEOs than the non CGCEOs. In addition, we can compare the share of CGCEOs who run their own firms with the average running their own firms in the provinces of Shanghai and Zhejiang (i.e., the provinces where the cities of Shanghai and Wenzhou are located) according to household data (covering on 65.555 households nationally). From this household data 18.5% are self-employed or owners of their firm, which is 21.5% in our data (see Department of Household Surveys, 2012). Similarly, the China General Social Survey provides occupational information, and confirms a share of

21.2% self-employed and private firm owners for the year 2011 (see CGSS 2011, retrieved September 12, 2016 at http://www.cssod.org). These figures do not suggest that there are any substantial selection effects among the CGCEOs.

Finally, while one might think that cooperativeness as measured in the PD is related to participation in the study, it is less straightforward to argue that the same holds for non-hawkishness in coordination and anti-coordination games, like BSS and Chicken. These games account for two-thirds of our results.

Differences in education:

One issue is that even if the length of education is the same, the content and quality of their education might differ. One thing to note is that while the quality of different schools differ in China (like elsewhere in the world), China has a relatively centralized system of education (in terms of university admissions etc.) which at least partly ought to reduce heterogeneity. Another issue is that even if the length of education is the same for CEOs and GGs the different groups could differ in their attainment of degrees. In Table A8 we provide the distribution on the subject's highest educational degree. It should be clear that there is a very close match for the different categories of highest education levels.

TABLE A8. HIGHEST EDUCATION LEVEL.

	CEOs	**Control Group**
Primary school education	4	3
Junior high school	20	19
Vocational school/high school	49	50
Junior college	56	62
Undergraduate education (China)	57	53
Master degree (China)	12	12
Master degree (abroad)	1	1
Number of Observations	199	200

Notes. Number of CEOs and CGs categorized according to their highest attained degree.

A4: Extreme Values

We here report regression results when the income variable is subject to 98% (Table A9) and 90% (Table A10) winsorizing. We also report regressions on beliefs (A11), on behavior when beliefs are included (Table A12) and on the average deviation from correct beliefs (Table A13) when income is subject to 90% winsorizing. The main results do not change.

TABLE A9. BEHAVIOR: MARGINAL EFFECTS.

	(1) Defect	(2) Hawk_BSS	(3) Hawk_Chicken
CEO	-0.120**	-0.129**	-0.182***
	(0.057)	(0.051)	(0.054)
Male	0.039	-0.072	-0.047
	(0.068)	(0.057)	(0.065)
Age	-0.001	0.004	-0.000
	(0.004)	(0.003)	(0.003)
School	-0.012	0.007	0.019*
	(0.011)	(0.010)	(0.011)
Income W98	-0.006	-0.015**	-0.002
	(0.008)	(0.006)	(0.007)
Shanghai	-0.010	-0.112*	-0.030
	(0.065)	(0.060)	(0.064)
Frame_Abstr	0.062	-0.015	-0.022
	(0.051)	(0.047)	(0.050)
Wald chi2	12.643	24.340	19.653
Prob > chi2	0.081	0.001	0.006
Pseudo R2	0.024	0.047	0.039
N	399	399	399

Notes. Results from logistic regressions. The income variable is subject to 98% winsorizing. Robust standard errors in parentheses, * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

TABLE A10. BEHAVIOR: MARGINAL EFFECTS.

	(1) Defect	(2) Hawk_BSS	(3) Hawk_Chicken
CEO	-0.101*	-0.126**	-0.184***
	(0.059)	(0.054)	(0.057)
Male	0.045	-0.066	-0.047
	(0.068)	(0.058)	(0.066)
Age	-0.001	0.005	-0.000
	(0.004)	(0.003)	(0.003)
School	-0.011	0.006	0.018*
	(0.011)	(0.010)	(0.011)
IncomeW90	-0.015	-0.019*	-0.001
	(0.012)	(0.010)	(0.011)
Shanghai	-0.010	-0.104*	-0.029
	(0.064)	(0.060)	(0.064)
Frame_Abstr	0.064	-0.014	-0.022
	(0.051)	(0.047)	(0.050)
Wald chi2	13.845	21.889	19.541
Prob > chi2	0.054	0.003	0.007
Pseudo R2	0.026	0.043	0.039
N	399	399	399

Notes. Results from logistic regressions. The income variable is subject to 98% winsorizing. Robust standard errors in parentheses, * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

TABLE A11. BELIEFS: AVERAGE PARTIAL EFFECTS.

	(1) Belief_PD	(2) Belief_BSS	(3) Belief_C
Founder	-0.176***	-0.049	-0.051
	(0.054)	(0.053)	(0.052)
Male	-0.027	-0.025	0.017
	(0.067)	(0.069)	(0.057)
Age	0.002	0.000	0.001
	(0.003)	(0.003)	(0.003)
School	-0.001	-0.003	0.010
	(0.010)	(0.011)	(0.009)
IncomeW90	-0.011	-0.013	-0.007
	(0.012)	(0.011)	(0.011)
Shanghai	-0.093*	-0.017	0.025
	(0.056)	(0.057)	(0.050)
Frame_Abstr	-0.015	-0.025	-0.159***
	(0.046)	(0.046)	(0.041)
Wald chi2	23.946	6.337	24.519
Prob > chi2	0.001	0.501	0.001
Pseudo R2	0.006	0.001	0.004
N	399	399	399

Notes. Results from fractional response regressions. Belief_PD, Belief_BSS, Belief_C represent the subjects' belief of the proportion playing Defect (PD) and Hawk (BSS and Chicken), respectively. The income variable is subject to 90% winsorizing. Robust standard errors in parentheses, * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

TABLE A12. BEHAVIOR AND BELIEFS: MARGINAL EFFECTS.

	(1) Defect	(2) Hawk_BSS	(3) Hawk_Chicken
CEO	-0.074	-0.112**	-0.188***
	(0.062)	(0.054)	(0.057)
Male	0.049	-0.068	-0.046
	(0.070)	(0.059)	(0.066)
Age	-0.001	0.005	-0.000
	(0.004)	(0.003)	(0.003)
School	-0.011	0.006	0.019*
	(0.011)	(0.010)	(0.011)
IncomeW90	-0.015	-0.018*	-0.001
	(0.013)	(0.010)	(0.011)
Shanghai	0.003	-0.102*	-0.027
	(0.066)	(0.059)	(0.064)
Frame_Abstr	0.069	-0.007	-0.030
	(0.051)	(0.047)	(0.051)
Belief_PD	0.357**		
	(0.143)		
Belief_BSS		0.580***	
		(0.135)	
Belief_C			-0.134
			(0.151)
Wald chi2	19.476	36.338	20.731
Prob > chi2	0.013	0.000	0.008
Pseudo R2	0.037	0.082	0.040
N	399	399	399

Notes. Results from logistic regressions. Belief_PD, Belief_BSS, Belief_C represent the subjects' belief of the proportion playing Defect (PD) and Hawk (BSS and Chicken), respectively. The income variable is subject to 90% winsorizing. Robust standard errors in parentheses, * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

TABLE A13. DEVIATION FROM CORRECT BELIEFS: AVERAGE PARTIAL EFFECTS.

	(1) Error_PD	(2) Error_BSS	(3) Error_C
CEO	-0.129**	-0.272***	-0.251***
	(0.061)	(0.062)	(0.056)
Male	-0.070	-0.054	0.024
	(0.066)	(0.074)	(0.069)
Age	-0.001	0.004	0.001
	(0.003)	(0.004)	(0.003)
School	-0.007	-0.018*	-0.030***
	(0.011)	(0.011)	(0.010)
IncomeW90	0.021	0.018	0.016
	(0.013)	(0.013)	(0.012)
Shanghai	0.049	0.054	0.124**
	(0.058)	(0.067)	(0.062)
Frame_Abstr	-0.075	0.041	0.196***
	(0.048)	(0.052)	(0.049)
Wald chi2	9.848	22.376	46.265
Prob > chi2	0.197	0.002	0.000
Pseudo R2	0.003	0.008	0.013
N	399	399	399

Notes. Results from fractional response regressions. Error_PD, Error_BSS and Error_C represent the absolute value of the difference between the subject's belief and the group's average behavior in PD, BSS and Chicken. The income variable is subject to 90% winsorizing. Robust standard errors in parentheses, * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

A5: Interviewers

Although, we think it is unlikely that interviewers are driving the differences in results between CEOs and the CGs due to what was said in section V.C., we provide some additional robustness checks on interviewer effects here. To test for such effects we run regressions separately for CEOs and the CGs for each game and treat each interviewer as a dummy. This implies three regressions for the CEOs and the CGs. The results of these regressions are presented in Table A14 and Table A15. (Note since marginal effects cannot reliably be calculated here the coefficient represent log of odds ratios.) Since there are 15 interviewers and some of them interview both CEOs and the CGs we obtain in total 3x19=57 dummies for the six regressions. With a significance level of 5 percent one should expect that about three dummies are significant for random reasons. This is also what we find. Interviewer 2 is significant in Chicken for CEOs and Interviewer 9 and 12 are significant for CGs in BSS. Hence, there is nothing from these regressions that suggest that interviewer effects are something problematic. Furthermore, it is somewhat comforting that not the same interviewer is recurring as significant in the regressions for the different games.

Although, the previous results did not indicate any non-normal prevalence of interviewer effect, we can run regressions where we exclude the significant Interviewers in respective game. Obviously, this means that we "press" our data for two reasons. First, we should expect our tests to be weaker since we exclude observations. Secondly, since we intentionally exclude observations that have the strongest correlation to the dependent variable, either positively or negatively, we should expect this to dampen or strengthen any true causal or randomly generated effect. In Table A15 we present regressions corresponding to Table 7 where significant interviewers are excluded. We exclude city (Shanghai) for multicollinearity reasons. For PD nothing changes, the significance of CEO remains since there is no significant interviewer effect detected. For BSS the regression concerns only the

327 subjects who were not interviewed by either 9 or 12. In this case the CEO variable is still negative, but not significant. When doing the same for Chicken (where subjects interviewed by Interviewer 2 are excluded) we find that the coefficient of the CEO variable becomes substantially larger (0.260 compared to 0.179) and it gets even more significant. Our conclusion from this investigation is that there is no strong evidence suggesting that interviewer effect is a serious problem. If we press our data and omit subsamples of observations (i.e., for interviewers) where the dependent variable deviate the most from its controlled mean, we still obtain significant results in the predicted direction for two of the three games. Both the strengthening and dampening of effects are consistent with what can be expected from statistical theory.

TABLE A14. INTERVIEWER EFFECTS ON THE CEOS.

	(1) Defect	(2) Hawk_BSS	(3) Hawk_Chicken
Male	0.123	-0.187	0.165
	(0.473)	(0.438)	(0.455)
Age	0.001	0.005	-0.035*
	(0.022)	(0.020)	(0.020)
School	-0.035	0.044	0.083
	(0.057)	(0.052)	(0.059)
Income	-0.011	-0.076**	0.002
	(0.031)	(0.031)	(0.031)
Frame Abstr	0.348	0.048	-0.489
	(0.320)	(0.322)	(0.334)
Interviewer 2	0.505	-0.253	1.866***
	(0.615)	(0.615)	(0.705)
Interviewer 13	-1.009*	0.315	0.764
	(0.596)	(0.564)	(0.598)
Interviewer 17	0.708	1.021	1.693*
	(0.799)	(0.925)	(0.891)
Wald chi2	17.215	11.711	32.985
Prob > chi2	0.440	0.764	0.011
Pseudo R2	0.072	0.044	0.124
N	198	195	198

Notes. Results from logistic regressions. Coefficients represent log of odds ratios. Interviewer 1 serves as baseline. For space reasons only interviewers who are significant in at least one game are included. Eight interviewers are excluded for this reason. Interviewer 8 is omitted in all regressions and 18 omitted in BSS due to lack of variation in dependent variable for these interviewers. Interviewer 8 and 18 did interviews with only 1 and 3 CEO subjects, respectively. Robust standard errors in parentheses. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

TABLE A15. INTERVIEWER EFFECTS ON THE CGS.

	(1) Defect	(2) Hawk_BSS	(3) Hawk_Chicken
Male	0.541	-0.813	-0.291
	(0.565)	(0.787)	(0.692)
Age	-0.028	0.060	0.089***
	(0.029)	(0.040)	(0.033)
School	-0.096	-0.018	0.166*
	(0.077)	(0.107)	(0.092)
Income	-0.054	-0.003	-0.068
	(0.085)	(0.069)	(0.074)
Frame Abstr	0.292	-0.194	0.335
	(0.299)	(0.361)	(0.343)
Interviewer 9	0.272	1.971**	1.123
	(0.689)	(0.903)	(0.820)
Interviewer 12	0.025	2.419**	1.174
	(0.632)	(1.166)	(0.766)
Wald chi2	12.116	18.545	21.635
Prob > chi 2	0.277	0.046	0.017
Pseudo R2	0.045	0.111	0.084
N	200	200	200

Notes. Results from logistic regressions. Coefficients represent log of odds ratios. In all 6 did interviews with CGs. Interviewer 1 serves as baseline. For space reasons only interviewers who are significant in at least one game are included. 3 interviewers are excluded for this reason. Robust standard errors in parentheses. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

TABLE A16. BEHAVIOR WITHOUT SIGNIFICANT INTERVIEWERS: MARGINAL EFFECTS.

	(1) Defect	(2) Hawk_BSS	(3) Hawk_Chicken
CEO	-0.121**	-0.061	-0.260***
	(0.056)	(0.059)	(0.057)
Male	0.040	-0.052	-0.010
	(0.067)	(0.071)	(0.071)
Age	-0.001	0.003	0.001
	(0.004)	(0.004)	(0.004)
School	-0.013	-0.003	0.014
	(0.009)	(0.009)	(0.009)
Income	-0.006	-0.013**	-0.003
	(0.008)	(0.006)	(0.007)
Frame Abstr	0.062	-0.010	-0.017
	(0.051)	(0.053)	(0.054)
Wald chi2	12.607	9.145	26.847
Prob > chi2	0.050	0.166	0.000
Pseudo R2	0.024	0.020	0.063
N	399	327	343

Notes. Results from logistic regressions when significant interviewers (9 and 12 in BSS, 2 in Chicken) are excluded from respective game. Robust standard errors in parentheses. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

A6: Owners and Founders

In this part we investigate the results on behavior and beliefs when we restrict the sample to CEOs who are owners (Table A17 and A19) or founders (Table A18 and A20).

TABLE A17. OWNERS' IMPACT ON BEHAVIOR: MARGINAL EFFECTS.

	(1) Defect	(2) Hawk_BSS	(3) Hawk_Chicken
Owner	-0.150**	-0.169***	-0.228***
	(0.065)	(0.055)	(0.059)
Male	0.045	-0.076	-0.056
	(0.075)	(0.060)	(0.071)
Age	-0.002	0.004	-0.003
	(0.004)	(0.003)	(0.004)
School	-0.010	0.015	0.021*
	(0.012)	(0.010)	(0.012)
Income	-0.020	-0.146**	-0.003
	(0.080)	(0.059)	(0.072)
Shanghai	-0.040	-0.139**	-0.067
	(0.071)	(0.065)	(0.070)
Frame Abstr	0.052	-0.017	-0.045
	(0.056)	(0.049)	(0.054)
Wald chi2	12.472	31.529	26.996
Prob > chi2	0.086	0.000	0.000
Pseudo R2	0.027	0.076	0.063
N	339	339	339

Notes. Results from logistic regressions when CEOs who are not owners of their firms are excluded from the CEO sample and when CGCEOs (enterprise directors) are excluded from the CGs. Robust standard errors in parentheses. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

TABLE A18. FOUNDERS' IMPACT ON BEHAVIOR: MARGINAL EFFECTS.

	(1) Defect	(2) Hawk_BSS	(3) Hawk_Chicken
Founder	-0.155**	-0.160***	-0.241***
	(0.067)	(0.057)	(0.062)
Male	0.034	-0.062	-0.047
	(0.076)	(0.060)	(0.072)
Age	-0.001	0.004	-0.002
	(0.004)	(0.003)	(0.004)
School	-0.011	0.012	0.022*
	(0.012)	(0.010)	(0.012)
Income	-0.007	-0.130**	0.018
	(0.082)	(0.057)	(0.077)
Shanghai	-0.046	-0.131**	-0.063
	(0.072)	(0.065)	(0.071)
Frame Abstr	0.033	-0.025	-0.039
	(0.057)	(0.049)	(0.055)
Wald chi2	12.131	27.590	26.679
Prob > chi2	0.096	0.000	0.000
Pseudo R2	0.027	0.070	0.065
N	323	323	323

Notes. Results from logistic regressions when CEOs who are not founders of their firms are excluded from the CEO sample and when CGCEOs (enterprise directors) are excluded from the CGs. Robust standard errors in parentheses. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

TABLE A19. OWNERS' IMPACT ON BELIEFS: AVERAGE PARTIAL EFFECTS.

	(1) Belief_PD	(2) Belief_BSS	(3) Belief_C
Owner	-0.327***	-0.128**	-0.042
	(0.059)	(0.063)	(0.054)
Male	-0.046	-0.021	0.007
	(0.070)	(0.076)	(0.063)
Age	0.004	0.003	0.002
	(0.003)	(0.003)	(0.003)
School	0.007	0.003	0.013
	(0.010)	(0.012)	(0.010)
Income	0.103	-0.088	-0.137*
	(0.091)	(0.094)	(0.072)
Shanghai	-0.155**	-0.053	0.024
	(0.061)	(0.064)	(0.055)
Frame Abstr	-0.020	-0.034	-0.175***
	(0.049)	(0.051)	(0.045)
Wald chi2	39.303	12.069	26.307
Prob > chi2	0.000	0.098	0.000
Pseudo R2	0.011	0.004	0.006
N	339	339	339

Notes. Results from fractional response regressions on beliefs when CEOs who are not owners of their firms are excluded from the CEO sample and when CGCEOs (enterprise directors) are excluded from the CGs. Robust standard errors in parentheses. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

TABLE A20. FOUNDERS' IMPACT ON BELIEFS: AVERAGE PARTIAL EFFECTS.

	(1) Belief_PD	(2) Belief_BSS	(3) Belief_C
Founder	-0.328***	-0.114*	-0.027
	(0.061)	(0.064)	(0.055)
Male	-0.051	-0.025	-0.003
	(0.071)	(0.076)	(0.063)
Age	0.004	0.003	0.001
	(0.003)	(0.003)	(0.003)
School	0.006	0.006	0.017*
	(0.011)	(0.012)	(0.010)
Income	0.087	-0.083	-0.154**
	(0.093)	(0.098)	(0.070)
Shanghai	-0.162***	-0.061	0.036
	(0.061)	(0.064)	(0.056)
Frame_Abstr	-0.042	-0.014	-0.150***
	(0.050)	(0.051)	(0.045)
Wald chi2	41.358	9.777	25.587
Prob > chi2	0.000	0.202	0.001
Pseudo R2	0.011	0.003	0.006
N	323	323	323

Notes. Results from fractional response regressions on beliefs when CEOs who are not founders of their firms are excluded from the CEO sample and when CGCEOs (enterprise directors) are excluded from the CGs. . Robust standard errors in parentheses. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

A7: Competition and Experience

In this part we investigate how the degree of competition (Table A21) and experience (Table A22) affects the results on CEO behavior.

TABLE A21. THE EFFECT OF COMPETITION ON CEOS: MARGINAL EFFECTS.

	(1) Defect	(2) Hawk_BSS	(3) Hawk_Chicken
Male	0.049	-0.037	0.010
	(0.100)	(0.099)	(0.107)
Age	0.002	0.002	-0.009*
	(0.005)	(0.005)	(0.005)
School	-0.000	0.014	0.015
	(0.015)	(0.014)	(0.015)
Income	-0.009	-0.193***	-0.017
	(0.080)	(0.074)	(0.074)
Shanghai	-0.151*	-0.137	0.112
	(0.091)	(0.093)	(0.093)
Frame_Abstr	0.060	0.011	-0.066
	(0.072)	(0.070)	(0.073)
Competition	0.003	-0.001	0.002
	(0.003)	(0.003)	(0.003)
Wald chi2	6.583	8.746	10.447
Prob > chi2	0.474	0.271	0.165
Pseudo R2	0.025	0.032	0.040
N	199	199	199

Notes. Results from logistic regressions. Robust standard errors in parentheses, * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

TABLE A22. THE EFFECT OF EXPERIENCE ON CEOS: MARGINAL EFFECTS.

	(1) Defect	(2) Hawk_BSS	(3) Hawk_Chicken
Male	0.043	-0.034	0.019
	(0.099)	(0.099)	(0.104)
Age	0.002	0.003	-0.003
	(0.006)	(0.006)	(0.005)
School	0.002	0.014	0.020
	(0.015)	(0.014)	(0.015)
Income	-0.012	-0.193**	-0.024
	(0.081)	(0.076)	(0.073)
Shanghai	-0.166*	-0.141	0.028
	(0.096)	(0.096)	(0.099)
Frame_A	0.052	0.013	-0.073
	(0.071)	(0.071)	(0.074)
YearsCEO	-0.001	-0.002	-0.022**
	(0.008)	(0.008)	(0.009)
Wald chi2	5.788	8.478	15.117
Prob > chi2	0.565	0.292	0.035
Pseudo R2	0.022	0.032	0.062
N	199	199	199

Notes. Results from logistic regressions. Robust standard errors in parentheses, * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$."

A6: Experimental Instructions and Tasks to Subjects*

QID |__|__|__|__|

Firm name: _____

Interviewer name:_____

General information (GI)

The purpose of this part of the study is to gain additional insights into economic behavior. You will make choices and guesses in different situations that will be explained later. To make it more interesting, realistic and fun, we will, at random let participants in this study earn some real money. One of your choices or one of your guesses made will be selected at random to determine a "money-earning decision" and you will be paid today according to your decision in this situation. The amount of money you earn will depend on the choices and guesses made by you. This means that you may earn money on any of the decisions made, but you will not know how much you will earn, before you have made all choices and guesses. All numbers referring to payoffs refers to CNY. The maximum amount you can earn is 600 CNY and the minimum is 0 CNY.

In some situations you will "play" with another person denoted as X and who has already made his/her choice, but we will not tell you about them. So you have to make your own decision based on what you think X has decided. (We have information about X:s decisions in an envelope. This envelope will be opened only if one of the decisions below is randomly selected as your "money-earning decision".) X has been informed that you will be asked to choose from the same options as he/she has chosen from. X does not know your identity and you will not learn the identity of X either. However, you should know that X like you [is a CEO of a Chinese firm and] is a Chinese citizen.

The possibility to earn real money is important in economic experiments and that there are strict rules against deceiving persons who participate. Hence, all information given here about money and other aspects are true and will be carried out according to the information given. Please, note also that there are no "right" or "wrong" choices in the decisions you are going to make. Therefore, make decisions according to what you think is best. Your answers will only be used for research purposes and will be kept strictly confidential.

Read the instructions to each task carefully. Ask the Interviewer if there is anything you do not understand. In each task you will make one choice between two options and one guess.

**Note the information to the CEOs and the control group differed slightly in a few places. To indicate this, the information only given to CEOs is underlined and in brackets, information only given to the control group is in italics and in parentheses. The codes for the games have been adapted to follow the presentation in the text.*

Situation CA

X has gotten the same information as you about the strategic situation and made a decision between A and B (based on his/her beliefs about what you will do). You will also be asked to choose between A and B. The payoffs in the strategic situation are as follows:

If you choose **A** and:

- X has chosen *A* your payoff is **0** CNY (and X' payoff is 0 CNY).

- X has chosen *B* your payoff is **600** CNY (and X' payoff is 150 CNY).

If you choose **B** and:

- X has chosen *A* your payoff is **150** CNY (and X' payoff is 600 CNY).

- X has chosen *B* your payoff is **300** CNY (and X' payoff is 300 CNY).

Note that X's choice affects your payoff and your choice affects his/her payoff.

Circle your preferred choice: ***A*** ***B***

Guess CAG

We asked a number of [CEOs] (*persons*) (who lives and work in China) to make choices in the situation above. They had the same chance to earn money as you have. You are now asked to guess how many percent of these persons you think chose option A. We ask you to think hard about this and we will pay you according to how close your guess is the true percentage (given that this situation becomes the money-earning decision).

We pay you:

500 CNY if your guess is within 1 percentage point of the correct answer.

300 CNY if your guess is within 5 percentage points of the correct answer.

200 CNY if your guess is within 10 percentage points of the correct answer.

100 CNY if your guess is within 20 percentage points of the correct answer.

0 otherwise.

How many percent of the persons that previously made choices described the situation above do you think chose option A? _____ (a number between 0 and 100).

Situation CF

Suppose that you manage a firm and can choose between investing in an outlet for the firms' products in a new market or not. You are already partially serving the market's customers from distance, but an outlet would increase your sales. At the same time there is another firm (denoted by X) from another region, which produces the same type of product as your firm does and also partially serves this new market. Firm X is in exactly the same situation as your firm and might also invest in a competing outlet. However, the market is not big enough for both of you to have an outlet so it will not be profitable to invest if X also does it. If you abstain from investing you can still serve some customers, but this number will be smaller if X invests. The monetary payoffs representing this strategic situation are given below.

X has gotten the same information as you about the strategic situation and made a decision between Investment and No Investment (based on his/her beliefs about what you will do). You will also be asked to choose between Investment and No Investment. The payoffs in the strategic situation are as follows:

If you choose **Investment** and:

- X has chosen *Investment* your payoff is **0** CNY (and X' payoff is 0 CNY).

- X has chosen *No Investment* your payoff is **600** CNY (and X' payoff is 150 CNY).

If you choose **No Investment** and:

- X has chosen *Investment* your payoff is **150** CNY (and X' payoff is 600 CNY).

- X has chosen *No Investment* your payoff is **300** CNY (and X' payoff is 300 CNY).

Note that X's choice affects your payoff and your choice affects his/her payoff.

Circle your preferred choice: ***Investment*** ***No Investment***

Guess CFG

We asked a number of [CEOs] (*persons*) (who lives and work in China) to make choices in the situation above. They had the same chance to earn money as you have. You are now asked to guess how many percent of these persons you think chose Investment. We ask you to think hard about this and we will pay you according to how close your guess is the true percentage (given that this situation becomes the money-earning decision).

We pay you:

500 CNY if your guess is within 1 percentage point of the correct answer.

300 CNY if your guess is within 5 percentage points of the correct answer.

200 CNY if your guess is within 10 percentage points of the correct answer.

100 CNY if your guess is within 20 percentage points of the correct answer.

0 otherwise.

How many percent of the persons that previously made choices described in the situation above do you think chose Investment? _____ (a number between 0 and 100).

Situation BA

X has gotten the same information as you about the strategic situation and made a decision between A and B (based on his/her beliefs about what you will do). You will also be asked to choose between A and B. The payoffs in the strategic situation are as follows:

If you choose **A** and:

- X has chosen *A* your payoff is **600** CNY (and X' payoff is 400 CNY).

- X has chosen *B* your payoff is **0** CNY (and X' payoff is 0 CNY).

If you choose **B** and:

- X has chosen *A* your payoff is **0** CNY (and X' payoff is 0 CNY).

- X has chosen *B* your payoff is **400** CNY (and X' payoff is 600 CNY).

Note that X's choice affects your payoff and your choice affects his/her payoff.

Circle your preferred choice: ***A*** ***B***

Guess BSSAG

We asked a number of [CEOs] (*persons*) (who lives and work in China) to make choices in the situation above. They had the same chance to earn money as you have. You are now asked to guess how many percent of these persons you think chose option A. We ask you to think hard about this and we will pay you according to how close your guess is the true percentage (given that this situation becomes the money-earning decision).

We pay you:

500 CNY if your guess is within 1 percentage point of the correct answer.

300 CNY if your guess is within 5 percentage points of the correct answer.

200 CNY if your guess is within 10 percentage points of the correct answer.

100 CNY if your guess is within 20 percentage points of the correct answer.

0 otherwise.

How many percent of the persons that previously made choices described in the situation above do you think chose option A? _____ (a number between 0 and 100).

Situation BSSF

Suppose that you manage a firm and you are to participate in one out of two important trade fairs with an exhibition. One fair takes place in city A and the other in city B. You must choose only one of them since they take place at the same date. An important circumstance is that it is essential that another firm denoted X who sells a complementary product (to your firm's product) comes to the same fair, otherwise your exhibition will not be attractive to potential customers. The problem is that you have not been able to get in contact with firm X, you must therefore choose which fair to participate in before you know firm X' choice. The fairs are equally good but city A is closer to your firm's location why this would be your preferred fair (with more customers etc.). You know that the management of firm X is in the same situation as you are. Your firm's presence is crucial for firm X, why X only benefits from the fair if your firm is there as well. Furthermore, since the time is running out for applications to the exhibitions you know that X must make its decision without knowing yours. You also know that city B is closer to firm X why this will be X' management's preferred fair. The monetary payoffs representing this strategic situation are given below.

X has gotten the same information as you about the strategic situation and made a decision between City A and City B (based on his/her beliefs about what you will do). You will also be asked to choose between City A and City B. The payoffs in the strategic situation are as follows:

If you choose **City A** and:

- X has chosen *City A* your payoff is **600** CNY (and X' payoff is 400 CNY).

- X has chosen *City B* your payoff is **0** CNY (and X' payoff is 0 CNY).

If you choose **City B** and:

- X has chosen *City A* your payoff is **0** CNY (and X' payoff is 0 CNY).

- X has chosen *City B* your payoff is **400** CNY (and X' payoff is 600 CNY).

Note that X's choice affects your payoff and your choice affects his/her payoff.

Circle your preferred choice: ***City A*** ***City B***

Guess BSSFG

We asked a number of [CEOs] (*persons*) (who lives and work in China) to make choices in the situation above. They had the same chance to earn money as you have. You are now asked to guess how many percent of these persons you think chose City A. We ask you to think hard about this and we will pay you according to how close your guess is the true percentage (given that this situation becomes the money-earning decision).

We pay you:

500 CNY if your guess is within 1 percentage point of the correct answer.

300 CNY if your guess is within 5 percentage points of the correct answer.

200 CNY if your guess is within 10 percentage points of the correct answer.

100 CNY if your guess is within 20 percentage points of the correct answer.

0 otherwise.

How many percent of the persons that previously made choices described in the situation above do you think chose City A? _____ (a number between 0 and 100).

Situation PDA

X has gotten the same information as you about the strategic situation and made a decision between A and B (based on his/her beliefs about what you will do). You will also be asked to choose between A and B. The payoffs in the strategic situation are as follows:

If you choose **A** and:

- X has chosen *A* your payoff is **250** CNY (and X' payoff is 250 CNY).

- X has chosen *B* your payoff is **50** CNY (and X' payoff is 350 CNY).

If you choose **B** and:

- X has chosen *A* your payoff is **350** CNY (and X' payoff is 50 CNY).

- X has chosen *B* your payoff is **100** CNY (and X' payoff is 100 CNY).

Note that X's choice affects your payoff and your choice affects his/her payoff.

Circle your preferred choice: ***A*** ***B***

Guess PDAG

We asked a number of [CEOs] (*persons*) (who lives and work in China) to make choices in the situation above. They had the same chance to earn money as you have. You are now asked to guess how many percent of these persons you think chose option A. We ask you to think hard about this and we will pay you according to how close your guess is the true percentage (given that this situation becomes the money-earning decision).

We pay you:

500 CNY if your guess is within 1 percentage point of the correct answer.

300 CNY if your guess is within 5 percentage points of the correct answer.

200 CNY if your guess is within 10 percentage points of the correct answer.

100 CNY if your guess is within 20 percentage points of the correct answer.

0 otherwise.

How many percent of the persons that previously made choices described in the situation above do you think chose option A? _____ (a number between 0 and 100).

Situation PDF

Suppose that you manage a firm in a small town and that you can choose to send your workers to a costly training which will make them more qualified and your firm more profitable. An important circumstance is that the training is only profitable if most of the trained workers stay in your company after the training. An alternative and less costly strategy is to hire workers that have been trained by another neighbor firm, denoted by X. However, this requires that the neighbor firm decides to send some of its worker to training. It should also be mentioned that firm X has the same options as your firm has, which means that it may recruit trained workers from your firm instead of training its own workers. To sum up, the most profitable situation for you is if you do not send your own workers to training but recruit from firm X, which trains its workers. The next best situation for you is if both you and X send workers to training and do not recruit from each other. The third best situation for you is if neither you nor X send any worker to training. The worst situation for you is if you send your workers to training and firm X recruits your trained workers. The monetary payoffs representing this strategic situation are given below.

X has gotten the same information as you about the strategic situation and made a decision between Training and Recruitment (based on his/her beliefs about what you will do). You will also be asked to choose between Training and Recruitment. The payoffs in the strategic situation are as follows:

If you choose **Training** and:

- X has chosen *Training* your payoff is **250** (and X' payoff is 250).

- X has chosen *Recruitment* your payoff is **50** (and X' payoff is 300).

If you choose **Recruitment** and:

- X has chosen *Training* your payoff is **300** (and X' payoff is 50).

- X has chosen *Recruitment* your payoff is **100** (and X' payoff is 100).

Note that X's choice affects your payoff and your choice affects his/her payoff.

Circle your preferred choice: ***Training*** ***Recruitment***

Guess PDFG

We asked a number of [CEOs] (*persons*) (who lives and work in China) to make choices in the situation above. They had the same chance to earn money as you have. You are now asked to guess how many percent of these persons you think chose Training. We ask you to think hard about this and we will pay you according to how close your guess is the true percentage (given that this situation becomes the money-earning decision).

We pay you:

500 CNY if your guess is within 1 percentage point of the correct answer.

300 CNY if your guess is within 5 percentage points of the correct answer.

200 CNY if your guess is within 10 percentage points of the correct answer.

100 CNY if your guess is within 20 percentage points of the correct answer.

0 otherwise.

How many percent of the persons that previously made choices described in the situation above do you think chose Training? _____ (a number between 0 and 100).

A7: Instructions to Interviewers

This part contains instructions to interviewers. For each task there are instructions and a list of material needed (forms, decks of cards etc).

Task: General Information (GI):

Instruction for conversation:

Interviewer, please note, don't read sentences in 【】

Instruction:

1. Please read the General Information page. Please do not turn pages. I will explain it to you after you finish reading.

2. Each of the following pages describes three different strategic situations. In each situation you are asked to make one choice and one guess. The different situations are independent of each other.

3. Next I will explain how the payment works. After you have made all decisions, we will have a deck of cards【Interviewer, please show the envelope of cards that will be used – envelope marked "Money earning decisions"】. Your choices and guesses are represented with cards in this deck. We will ask you to draw one card from the deck and that card will determine the money earning decision and hence which of your choices or guesses that we will pay.

4. Do you have any questions?

5. 【Interviewer，answer the questions until you are sure that the subject understands.】

6. now please turn to the next page.

Material: GI-form, Envelope marked "Money earning decisions", Questionnaire with experimental tasks in proper order (one for each of the six treatments), pen (do not use pencils).

Situation CA

1. Please read the form.

2. 【Interviewer, please observe whether the subject has finished reading】Let me explain it to you. Here is the envelope with X:s decision in this situation 【show the subject the envelope marked "X:s decisions in CA"】.

3. X:s decision will be revealed if this decision is randomly selected as the money earning decision. You and X will then be paid according to the sums described in the form. 【Point at the payoff information in the subject's form.】

4. Do you have any questions 【Interviewer, answer the questions until you are sure that the subject understands.】

6. Please fill in the form.

7. 【Interviewer, please look at the questionnaire, check that the subject has filled in "A" or "B" at the bottom of the form. If you see that the subject has made any mistakes such as making a decision for X as well, explain again.】
May I explain to you again?
【Explanation….Be careful to point out that X has already made his/her decision and that the subject has to make the decision without knowing this.】
【Let the subject change his/her decisions if (s)he wants. If (s)he does not want to change the decision move on.】

Material: CA-form, Envelope marked "X:s decisions in CA"

GUESS CAG

1. Please read the form.

2. 【Interviewer, please observe whether the subject has finished reading】Let me explain it to you. Here is the envelope with information about the percentages that chose Option A in the previous situation. 【show the subject the envelope marked "Information about percentages"】.

3. The true percentage will be revealed if this guess is randomly selected as the money earning decision. You will then be paid according to the sums described in the form. 【Point at the payoff information in the subject's form.】

4. Do you have any questions 【Interviewer, answer the questions until you are sure that the subject understands.】

6. Please make your guess by filling in the form.

7. 【Interviewer, please look at the questionnaire, check that the subject has filled in a number between 0 and 100 at the bottom of the form. If this is not the case, instruct the subject to fill in a number.】

Material: CAG-form, Envelope marked "Information about percentages".

Situation CF

1. Please read the form.

2. 【Interviewer, please observe whether the subject has finished reading】Let me explain it to you. Here is the envelope with X:s decision in this situation 【show the subject the envelope marked "X:s decisions CG"】.

3. X:s decision will be revealed if this decision is randomly selected as the money earning decision. You and X will then be paid according to the sums described in the form. 【Point at the payoff information in the subject's form.】

4. Do you have any questions 【Interviewer, answer the questions until you are sure that the subject understands.】

6. Please fill in the form.

7. 【Interviewer, please look at the questionnaire, check that the subject has filled in "A" or "B" at the bottom of the form. If you see that the subject has made any mistakes such as making a decision for X as well, explain again.】
May I explain to you again?
【Explanation….Be careful to point out that X has already made his/her decision and that the subject has to make the decision without knowing this.】
【Let the subject change his/her decisions if (s)he wants. If (s)he does not want to change the decision move on.】

Material:CF-form, Envelope marked "X:s decisions in CF".

GUESS CFG

1. Please read the form.

2. 【Interviewer, please observe whether the subject has finished reading】Let me explain it to you. Here is the envelope with information about the percentages that chose Investment in the previous situation. 【show the subject the envelope marked "Information about percentages"】.

3. The true percentage will be revealed if this guess is randomly selected as the money earning decision. You will then be paid according to the sums described in the form. 【Point at the payoff information in the subject's form.】

4. Do you have any questions 【Interviewer, answer the questions until you are sure that the subject understands.】

6. Please make your guess by filling in the form.

7. 【Interviewer, please look at the questionnaire, check that the subject has filled in a number between 0 and 100 at the bottom of the form. If this is not the case, instruct the subject to fill in a number.】

Material: CFG -form, Envelope marked "Information about percentages".

Situation BSSA

1. Please read the form.

2. 【Interviewer, please observe whether the subject has finished reading】Let me explain it to you. Here is the envelope with X:s decision in this situation 【show the subject the envelope marked "X:s decisions in BSSA"】.

3. X:s decision will be revealed if this decision is randomly selected as the money earning decision. You and X will then be paid according to the sums described in the form. 【Point at the payoff information in the subject's form.】

4. Do you have any questions 【Interviewer, answer the questions until you are sure that the subject understands.】

6. Please fill in the form.

7. 【Interviewer, please look at the questionnaire, check that the subject has filled in "A" or "B" at the bottom of the form. If you see that the subject has made any mistakes such as making a decision for X as well, explain again.】
May I explain to you again?
【Explanation….Be careful to point out that X has already made his/her decision and that the subject has to make the decision without knowing this.】
【Let the subject change his/her decisions if (s)he wants. If (s)he does not want to change the decision move on.】

Material: BSSA -form, Envelope marked "X:s decisions in BSSA".

GUESS BSSAG

1. Please read the form.

2. 【Interviewer, please observe whether the subject has finished reading】Let me explain it to you. The group that already has made their choices were in exactly same situation as you, which means that he/she earned most when both chose Option A. Here is the envelope with information about the percentages that chose Option A in the previous situation. 【show the subject the envelope marked "Information about percentages"】.

3. The true percentage will be revealed if this guess is randomly selected as the money earning decision. You will then be paid according to the sums described in the form. 【Point at the payoff information in the subject's form.】

4. Do you have any questions 【Interviewer, answer the questions until you are sure that the subject understands.】

6. Please make your guess by filling in the form.

7. 【Interviewer, please look at the questionnaire, check that the subject has filled in a number between 0 and 100 at the bottom of the form. If this is not the case, instruct the subject to fill in a number.】

Material: BSSAG -form, Envelope marked "Information about percentages".

Situation BSSF

1. Please read the form.

2. 【Interviewer, please observe whether the subject has finished reading】Let me explain it to you. Here is the envelope with X:s decision in this situation 【show the subject the envelope marked "X:s decisions in BSSF"】.

3. X:s decision will be revealed if this decision is randomly selected as the money earning decision. You and X will then be paid according to the sums described in the form. 【Point at the payoff information in the subject's form.】

4. Do you have any questions 【Interviewer, answer the questions until you are sure that the subject understands.】

6. Please fill in the form.

7. 【Interviewer, please look at the questionnaire, check that the subject has filled in "City A" or "City B" at the bottom of the form. If you see that the subject has made any mistakes such as making a decision for X as well, explain again.】
May I explain to you again?
【Explanation….Be careful to point out that X has already made his/her decision and that the subject has to make the decision without knowing this.】
【Let the subject change his/her decisions if (s)he wants. If (s)he does not want to change the decision move on.】

Material: BSSF -form, Envelope marked "X:s decisions in BSSF".

GUESS BSSFG

1. Please read the form.

2. 【Interviewer, please observe whether the subject has finished reading】Let me explain it to you. The group that already has made their choices were in exactly same situation as you, which means that he/she earned most when both chose City A. Here is the envelope with information about the percentages that chose City A in the previous situation. 【show the subject the envelope marked "Information about percentages"】.

3. The true percentage will be revealed if this guess is randomly selected as the money earning decision. You will then be paid according to the sums described in the form. 【Point at the payoff information in the subject's form.】

4. Do you have any questions 【Interviewer, answer the questions until you are sure that the subject understands.】

6. Please make your guess by filling in the form.

7. 【Interviewer, please look at the questionnaire, check that the subject has filled in a number between 0 and 100 at the bottom of the form. If this is not the case, instruct the subject to fill in a number.】

Material: BSSFG -form, Envelope marked "Information about percentages".

Situation PDA

1. Please read the form.

2. 【Interviewer, please observe whether the subject has finished reading】Let me explain it to you. Here is the envelope with X:s decision in this situation 【show the subject the envelope marked "X:s decisions in PDA"】.

3. X:s decision will be revealed if this decision is randomly selected as the money earning decision. You and X will then be paid according to the sums described in the form. 【Point at the payoff information in the subject's form.】

4. Do you have any questions 【Interviewer, answer the questions until you are sure that the subject understands.】

6. Please fill in the form.

7. 【Interviewer, please look at the questionnaire, check that the subject has filled in "A" or "B" at the bottom of the form. If you see that the subject has made any mistakes such as making a decision for X as well, explain again.】
May I explain to you again?
【Explanation….Be careful to point out that X has already made his/her decision and that the subject has to make the decision without knowing this.】
【Let the subject change his/her decisions if (s)he wants. If (s)he does not want to change the decision move on.】

Material: PDA-form, Envelope marked "X:s decisions in PDA".

GUESS PDAG

1. Please read the form.

2. 【Interviewer, please observe whether the subject has finished reading】Let me explain it to you. Here is the envelope with information about the percentages that chose Option A in the previous situation. 【show the subject the envelope marked "Information about percentages"】.

3. The true percentage will be revealed if this guess is randomly selected as the money earning decision. You will then be paid according to the sums described in the form. 【Point at the payoff information in the subject's form.】

4. Do you have any questions 【Interviewer, answer the questions until you are sure that the subject understands.】

6. Please make your guess by filling in the form.

7. 【Interviewer, please look at the questionnaire, check that the subject has filled in a number between 0 and 100 at the bottom of the form. If this is not the case, instruct the subject to fill in a number.】

Material: PDAG -form, Envelope marked "Information about percentages".

Situation PDF

1. Please read the form.

2. 【Interviewer, please observe whether the subject has finished reading】Let me explain it to you. Here is the envelope with X:s decision in this situation 【show the subject the envelope marked "X:s decisions in PDF"】.

3. X:s decision will be revealed if this decision is randomly selected as the money earning decision. You and X will then be paid according to the sums described in the form. 【Point at the payoff information in the subject's form.】

4. Do you have any questions 【Interviewer, answer the questions until you are sure that the subject understands.】

6. Please fill in the form.

7. 【Interviewer, please look at the questionnaire, check that the subject has filled in "A" or "B" at the bottom of the form. If you see that the subject has made any mistakes such as making a decision for X as well, explain again.】
May I explain to you again?
【Explanation….Be careful to point out that X has already made his/her decision and that the subject has to make the decision without knowing this.】
【Let the subject change his/her decisions if (s)he wants. If (s)he does not want to change the decision move on.】

Material: PDF -form, Envelope marked "X:s decisions in PDF".

GUESS PDFG

1. Please read the form.

2. 【Interviewer, please observe whether the subject has finished reading】Let me explain it to you. Here is the envelope with information about the percentages that chose Training in the previous situation. 【show the subject the envelope marked "Information about percentages"】.

3. The true percentage will be revealed if this guess is randomly selected as the money earning decision. You will then be paid according to the sums described in the form. 【Point at the payoff information in the subject's form.】

4. Do you have any questions 【Interviewer, answer the questions until you are sure that the subject understands.】

6. Please make your guess by filling in the form.

7. 【Interviewer, please look at the questionnaire, check that the subject has filled in a number between 0 and 100 at the bottom of the form. If this is not the case, instruct the subject to fill in a number.】

Material: PDFG -form, Envelope marked "Information about percentages".

Instructions to procedure after all tasks are completed:

Random selection of money earning decision:

1. Take out the deck of card from the envelope denoted “Money earning decision”.

2. Inform the subject that (s)he will now draw a card representing one decision previously made. Money will be paid according to this selected decision. Remind the subject that many decisions will result in no money at all or rather small amounts of money.

3. Ask the subject to draw a card.

4. Write down the decision drawn on the Earnings-form.

5. Circle the money earning decision with a pen on the subject’s questionnaire. (Example: if the subject draws a card with “BSSAG” go to the BSSAG-form.) Point it out to the subject so that (s)he understands, which decision was chosen. If it is not a guess write the option chosen or on the Earnings-form.

6. The continuing procedure will depend on the decision drawn:

Material: Envelope marked “Money earning decisions”, A marked deck with 30 cards representing the choices and guesses. Earnings-form.

--> *If a CA or CF decision is drawn.*

I. Look at the subject's decision at the CA or CF-form.
II. Take out X:s decision sheet ("X:s decision in CA" or "X:s decision in CF"). Show it to the subject and look up, which decision X made in the money earning decision. Point at the decision made by X and show it to the subject.
- If the subject chose Option A (in CA) or Investment (in CF) and X chose Option A or Investment → inform the subject that (s)he regretfully did not earn anything.
- If the subject chose Option A (in CA) or Investment (in CF) and X chose Option B / No Investment → inform the subject that (s)he earned 600 CNY.
- If the subject chose Option B (in CA) or No Investment (in CF) and X chose Option A or Investment → inform the subject that (s)he earned 150 CNY.
- If the subject chose Option B (in CA) or No Investment (in CF) and X chose Option B / No Investment → inform the subject that (s)he earned 300 CNY.

III. Write down the sum the subject earns on the Earnings-form. If anything earned, pay him/her the amount earned and fill out the receipt form.

IV. Thank the subject for participating.

Material: The subject's CA or CF -form, Envelope marked "X:s decisions in CA" or "X:s decisions in CF", Earnings-form, receipt form.

--> *If a BSSA or BSSF decision is drawn.*

I. Look at the subject's decision at the BSSA or BSSF-form.
II. Take out X:s decision sheet ("X:s decision in BSSA" or "X:s decision in BSSF"). Show it to the subject and look up, which decision X made in the money earning decision. Point at the decision made by X and show it to the subject.
- If the subject chose Option A (in BSSA) or City A (in BSSF) and X chose Option A or City A → Inform the subject that (s)he earned 600 CNY.
- If the subject chose Option A (in BSSA) or City A (in BSSF) and X chose Option B / City B → inform the subject that (s)he regretfully did not earn anything.
- If the subject chose Option B (in BSSA) or City B (in BSSF) and X chose Option A or City A → inform the subject that (s)he regretfully did not earn anything.
- If the subject chose Option B (in BSSA) or City B (in BSSF) and X chose Option B / City B → inform the subject that (s)he earned 400 CNY.

III. Write down the sum the subject earns on the Earnings-form. If anything earned, pay him/her the amount earned and fill out the receipt form.

IV. Thank the subject for participating.

Material: The subject's BSSA or BSSF -form, Envelope marked "X:s decisions in BSSA" or "X:s decisions in BSSF", Earnings-form, receipt form.

--> *If a PDA or PDF decision is drawn.*

I. Look at the subject's decision at the PDA or PDF-form.
II. Take out X:s decision sheet ("X:s decision in PDA" or "X:s decision in PDF"). Show it to the subject and look up, which decision X made in the money earning decision. Point at the decision made by X and show it to the subject.
- If the subject chose Option A (in PDA) or Training (in PDF) and X chose Option A or Training → inform the subject that (s)he earned 250 CNY.
- If the subject chose Option A (in PDA) or Training (in PDF) and X chose Option B / Recruitment → inform the subject that (s)he earned 50 CNY.
- If the subject chose Option B (in PDA) or Recruitment (in PDF) and X chose Option A or Training → inform the subject that (s)he earned 300 CNY.
- If the subject chose Option B (in PDA) or Recruitment (in PDF) and X chose Option B / Recruitment → inform the subject that (s)he earned 200 CNY.

III. Write down the sum the subject earns on the Earnings-form. If anything earned, pay him/her the amount earned and fill out the receipt form.

IV. Thank the subject for participating.

Material: The subject's PDA or PDF -form, Envelope marked "X:s decisions in PDA" or "X:s decisions in PDF", Earnings-form, receipt form.

--> *If a Guess decision is drawn (that is a card with any of the following codes CAG, CFG, BSSAG, BSSFG, PDAG, PDFG*).

I. Look at the number of percentages the subject has written at the bottom of his/her form that correspond to the card. (If a CAG/CFG card was drawn look at the subjects guess at the CAG or CFG form. If a BSSAG/BSSFG card was drawn look at the subjects guess at the BSSAG or BSSFG form. If a PDAG/PDFG card was drawn look at the subjects guess at the PDAG or PDFG form.

II. Take out the sheet ("Information about percentages"). Show it to the subject and look up, which decision the guess concerned (i.e., *CAG, CFG, BSSAG, BSSFG, PDAG, PDFG*). Point at the number of percentages corresponding to his guess and show it to the subject. Calculate the difference between the correct percentage and the subject's guess (a number between 0 and 100). Inform the subject of this difference. Write down the difference in the Earnings form.
If this difference is:
- not more than 1 → pay the subject 500 CNY
- more than 1 but not more than 5 → pay the subject 300 CNY
- more than 5 but not more than 10 → pay the subject 200 CNY
- more than 10 but not more than 20 → pay the subject 100 CNY
- more than 20 → inform the subject that his/her guess was too far away from the correct percentage and will regretfully not be paid anything.

III. Write down the sum the subject earns on the Earnings-form. If anything earned, pay him/her the amount earned and fill out the receipt form.

IV. Thank the subject for participating.

Material: The subject's relevant guess-form (corresponding to codes *CAG, CFG, BSSAG, BSSFG, PDAG, PDFG*). Envelope marked "Information about percentages", Earnings-form, receipt form.