Shall we pay all? An experimental test of Random Incentivized Systems

Sophie Clotab,*, Gilles Grolleauf, Lisette Ibanecz

a University of Reading, Whiteknights street, Reading, United Kingdom
b CEE-M, Montpellier SupAgro, INRA, CNRS, Univ. Montpellier, Univ. Bourgogne Franche-Comté, Burgundy School of Business-CEREN, France
c University of Reading, Whiteknights street, Reading, United Kingdom

ARTICLE INFO

Keywords: Random Incentive Systems Experimental methodology Dictator game

ABSTRACT

This study seeks to investigate the impact of payment procedures on behaviour in a standard Dictator game. Although the Between-subjects Random Incentivized System (BRIS) is increasingly utilized in experimental economics, its use could be contested from a purely theoretical point of view. In the BRIS, all subjects play the Dictator game, but only a percentage of subjects (e.g., 1 out of 10) are paid. The aim of this article is to test whether the results obtained using this system are consistent with those obtained using a conventional full payment system in which every subject receives payment. An additional, hypothetical treatment is also run. Results show a very similar pattern between the BRIS and the full payment treatment, whereas the hypothetical payment mechanism leads to far fewer egoistic players and far more egalitarians. These findings lend support to the use of BRIS as a valid experimental methodology.

Experimental economics is a fast-growing field challenged by robustness and external validity concerns. Ever-larger samples are desired, which presents researchers with logistical and financial challenges (Charness et al., 2013). The Between-subject Random Incentivized System (BRIS) has emerged as a potential solution that could enable researchers to test ideas among large samples of subjects without the logistical constraints that arise with full payment systems. Additionally, it reduces the significant costs of paying all subjects and eases the organizational constraints associated with large-scale experiments. Using this mechanism, all subjects play the game, but only a percentage of subjects are paid. If experimenters maintain the endowment at the original level under this random pay procedure, the expected value of the stake (i.e., an individual’s statistical expectation of a gamble’s outcome) is lowered, and the effectiveness of the incentive becomes debatable from a methodological standpoint. Given that economic experiments are characterized by the use of monetary incentives, this is an important issue to address. In contrast to psychologists, economists argue that conditioning experimental earnings on individual decisions more accurately elicits ‘true’ preferences and therefore more closely corresponds to the ‘real’ decisions that individuals would actually make in the field (Kagel and Roth, 1995). From this perspective, incentives should therefore be designed so that rational individuals are able to calculate the costs and benefits of every choice (Madsen and Stenheim, 2015). This position is based on the assumption that individuals are rational, self-interested and seek to maximize their net payoffs.

The expected value of a 10€ stake that is associated with a one-in-ten probability of receiving payment, for example, is 1€. In order to obtain a situation similar to that of the full pay experiment (in which every player receives a 10€ payment), a prescription of expected value theory is to increase the stake (i.e., to 100€ in this example with a winning probability of 1/10). Moreover, evidence has shown that people are particularly attracted to small probabilities of large rewards and generally tend to overweight small probabilities (Kahneman and Tversky, 1979; Prelec, 1998). Without such insights, how can one explain the fact that sales of the Euromillion 2€ lottery ticket reach up to 3 million purchases per hour at their peak, while the expected gain per ticket is only 0.08€? In a medical study by Volpp et al. (2008), using lotteries as incentives significantly and positively altered health behaviours, showing that even rewards with small expected value may have an incentive effect. Another variation of the standard payment system is the use of hypothetical payments. Also, the literature suggests that hypothetical payments may have a limited incentive effect. In social experiments where payments are hypothetical rather than real, participants act more generously and keep less money for themselves (Selton, 1992; Forsythe et al., 1994).

In this study, we run a Dictator Game in the laboratory to test whether behaviour under the Between-subject Random Incentivized System (BRIS) is consistent with that observed under a standard individual payment system (Full Payment Scheme) and/or whether these behaviours differ substantially from that observed in a hypothetical setting. Against the standard predictions offered by Expected Value
theory, observed behaviours in a 10€ full pay vs. a 10€ random pay (i.e. one-in-ten probability) experiment demonstrate very similar characteristics. Conversely, when the stake is increased in order to maintain a constant expected value relative to the 10€ full pay procedure (i.e., the chance to win 100€ with a one-in-ten probability), small behavioural deviations from the standard prediction emerge. Finally, when financial incentives are removed entirely, even greater discrepancies emerge: we observe fewer strictly egotistic players and more egalitarians.

1. Background

Despite its growing use (Clot et al., 2014; Brañas-Garza et al., 2013; Exadaktylos et al., 2013; Fong and Luttmer 2009; Carpenter et al., 2008; Langer and Weber 2008; Bettinger and Slonim 2007), no clear-cut evidence from the literature demonstrates that BRIS is statistically reliable. More specifically, the use of the strategy method in dictator games offers an interesting BRIS variant of the standard version. With the strategy method, each subject recruited generate data, while only half of the subjects recruited generate data in the standard version. This paper uses a laboratory experiment based on the standard dictator game (Forsythe et al., 1994) to address the following question: how does the Between-subject Random Incentivized System (BRIS) impact individual decision making compared to the standard incentive system? The dictator game is one of the most popular games among experimentalists. Using a very simple design, it is able to quantify systematic behavioural differences between populations. It has been run in more than one hundred published papers over the last three decades (Engel, 2011), consistently demonstrating violations of the selfishness axiom. Moreover, given that dictator games are susceptible to numerous types of framing effects (Brañas-Garza, 2007; Zizzo, 2010), we contend that any test of invariance to framing effects should include a dictator game, especially in the light of several recent contributions that suggest that people’s choices in dictator games change when the probability of realizing the decision changes (e.g., Kellner et al., 2015; Brock et al., 2013). In this work, we analyse how certainty in regard to the realization of expected pay-offs impacts pro-social behaviour. The selfishness axiom of standard economic theory assumes that individuals seek to maximize their net payoffs and thus predicts null donations in a dictator game, regardless of the incentive formula. Numerous studies on pro-social preferences consistently show, however, that a large proportion of people donate a positive amount of money to an anonymous participant (Engel, 2011). According to this literature, we therefore expect to observe positive donations in our experiment. From the expected value theory viewpoint, if participants expect getting less money (e.g., 1/10 to get 10€ compared to 1/10 to get 100€), they are mechanically driven to give less. Indeed, the expected value of the amount at stake is lower. Assuming that individuals are equally sensitive to probabilities and stakes, we expect that a higher, probabilistic stake that is equivalent in expected value to a lower, non-probabilistic stake should not alter individual decisions in a systematic way. Finally, in the hypothetical scenario, in which there is no cost of giving, the social desirability bias leads us to expect to observe higher donations than in either of the incentivized scenarios.

Psychologists generally assume that, even in the presence of monetary rewards, other factors that influence individual decisions (e.g., conformity, social norms) tend to override, or at least significantly affect, payoff-based concerns (Madsen and Stenheim, 2015). Results regarding the comparison of hypothetical vs. incentivized experiments in the literature are mixed, suggesting context dependence (i.e. type of game, sample selection). El Harbi et al. (2015; see also Rubinstein, 2001, 2013), for instance, compared hypothetical and incentivized experimental methods in the context of positional concerns. They argued that, although they may be likely to overestimate the proportion of socially desirable choices, hypothetical surveys nevertheless constitute a powerful complement to incentivized experiments insofar as they have the capacity to generate interesting qualitative insights at a low cost. Falk et al. (2016) developed a survey tool aiming to measure risk, time and social preferences based on hypothetical questions previously validated by financially incentivised experiments. Ben-Ner et al. (2008) found similar behavioural patterns between a dictator game played with actual money and a hypothetical dictator game, suggesting that the “average dictator is not acting less generously when payments are real than hypothetical”. Nevertheless, the effect of monetary incentives depends on two individual traits of participants: extraversion and agreeableness.

Studies about BRIS are scarce. A few exceptions apply, namely for the ultimatum game (Bolle, 1990), as well as less conventional experiments such as the ‘Deal or no Deal’ game (Baltussen et al., 2011). BRIS has also been studied using the Hybrid Random Incentivized System (HRIS) mechanism (Armantier, 2006; Stahl and Haruvy, 2006), which is a combination of BRIS and a Within-subject Random Incentivized System (WRIS). However, these studies embed confounding factors (i.e., collateral results), which obscure the issue. Additional probabilities inherent to either the experimental design (i.e., strategy method, risky choice) or the incentive mechanism (i.e., HRIS) make the full pay version of these experiments unsuitable as representations of baseline behaviour because they distort the elicitation of true preferences.

Bolle (1990) compared the outcomes of $10 ultimatum games under random pay and full pay procedures. In the random pay experiment, 2 out of 20 subjects were randomly selected to receive payment. In the full pay experiment, all 24 participants were paid. The hypothesis of identical offers in experiments with random pay and full pay was not rejected. However, the ultimatum game in this experiment was run in its strategic version (i.e., each pair of subjects played both roles and a lottery subsequently determined which player would be the proposer). Given the role uncertainty in this design, even the full pay experiment does not perfectly correspond to decision scenarios in which the potential gain is certain. The same criticism applies to Baltussen et al. (2011) study. Their experiment mimics the choice problems in the TV show Deal or No Deal. In each round of the game, a subject must choose between a sure alternative and a risky lottery with known probabilities. Even in the full pay version of the game, however, participants’ observed behaviour is presumably driven not only by their social preferences, but also by their risk preferences.

---

¹ Each subject plays the game as the Dictator, but would potentially be either a Dictator or Recipient with one half probability (Brañas-Garza et al. 2013)

² For instance, Rubinstein (2001, p. 626) states that “paying subjects will change the distribution of responses, however, assuming that we only want to confirm the existence of a plausible pattern of reasoning it seems unlikely that whether or not we pay the subjects will effect results more than an infinite number of other factors (such as, gender, age, profession, time of day, mood, etc.).”

³ Broadly defined, Random Incentivized Systems include two different categories: the Within-subject Random Incentivized System (WRIS) and the Between-subject Random Incentivized System (BRIS). The WRIS consists in randomly paying only one task over a set of multiple tasks. An oft-cited argument in favor of this system is that the WRIS avoids the endowment effect (i.e. when a player’s choice is influenced by the size of the potential gains the player has accrued from previous games). The validity of the Within-subject WRIS has been investigated in many studies. While past research has shown that decisions follow the rule of isolation (i.e., each decision is made independently) more than reduction (Beattie and Loomes 1997, Cubitt et al. 1998, Camerer 1989), recent research from Cox et al., 2015 suggests that subjects do not in fact isolate each individual decision in multiple decision experiments.
دریافت فوری متن کامل مقاله

امکان دانلود نسخه تمام متن مقالات انگلیسی
امکان دانلود نسخه ترجمه شده مقالات
پذیرش سفارش ترجمه تخصصی
امکان جستجو در آرشیو جامعی از صدها موضوع و هزاران مقاله
امکان دانلود رایگان ۲ صفحه اول هر مقاله
امکان پرداخت اینترنتی با کلیه کارت های عضو شتاب
دانلود فوری مقاله پس از پرداخت آنلاین
پشتیبانی کامل خرید با بهره مندی از سیستم هوشمند رهگیری سفارشات