ISSN (Print) 0473-453X
Discussion Paper No. 1238
ISSN (Online) 2435-0982

# PAYING TO AVOID THE SPOTLIGHT

Te Bao
John Duffy
Nobuyuki Hanaki

Secondly Revised February 2025
Revised September 2024
April 2024

The Institute of Social and Economic Research
Osaka University
6-1 Mihogaoka, Ibaraki, Osaka 567-0047, Japan

# Paying to avoid the spotlight

Te Bao* John Duffy† Nobuyuki Hanaki‡

February 27, 2025

**Abstract**

In the digital age, privacy in economic activities is increasingly threatened. In considering policies to address this threat, it is useful to gauge what value, if any, people attach to privacy in their economic activities: specifically, reputational concerns related to dishonest behavior. We assess individuals' willingness to pay to avoid scrutiny of their potentially dishonest behavior in a simple coin flipping task, conducted in Japan, China, and the United States. Our findings reveal that people's willingness to pay to "avoid the spotlight" is positive and economically sizable across all three countries and is largest in Japan.

Keywords: Privacy, Monitoring, Surveillance, Willingness to pay, Dishonesty, Lying, Social image concerns

JEL Codes: C91, D83, D91

*Nanyang Technological University

†University of California, Irvine, and Institute of Social and Economic Research, University of Osaka

‡Corresponding author. Institute of Social and Economic Research, University of Osaka, and University of Limassol

# 1 Introduction

In our increasingly digital world, the ability to maintain privacy in economic matters is under significant threat (Acquisti et al., 2015, 2016). The majority of financial transactions, including those conducted using debit and credit cards, online banking, and mobile payment platforms, are now conducted electronically. These methods are all easily surveilled, with transaction records accessible through court orders in some jurisdictions, or directly monitored by governments in other settings. Consequently, such transactions often lack any privacy protections. The rise of cryptocurrencies partially reflects a pursuit of transactional privacy and independence from the volatility of sovereign currencies (Herskind et al., 2020). In response, several central banks, initially China, are developing central bank digital currencies (CBDCs) to sustain fiat currency demand and thus enable or preserve various monetary policies. However, CBDC transactions that are linked to electronic ledgers will inevitably lead to a further erosion of privacy (Ahnert et al., 2022; Wang, 2023).

There is a large literature on internet privacy that addresses topics such as the provision of personal information during online purchases (Beresford et al., 2012; Jentzsch et al., 2012; Preibusch et al., 2013; Tsai et al., 2011), and methods to hide various types of information such as browsing history, contact information, location, and text on smartphone apps (Savage and Waldman, 2015; Skatova et al., 2023). An existing international comparison across the United States, Germany, and several Latin American countries shows that Germans value these privacy concerns more than people in other countries (Prince and Wallsten, 2022).

While such concerns about controlling the disclosure of personal in-

formation are certainly important, they are not the specific focus of our study. Instead, we are interested in privacy surrounding *economic transactions* – specifically, the desire for economic activities to be untraceable, as is possible with cash transactions.

There can be several rationales for seeking privacy or anonymity in economic transactions. First, privacy can be seen as a form of agency, or self-determination, allowing individuals to control the disclosure of personal information according to their own preferences rather than due to external pressure. This control can be critical in economic environments where personal data is both a valuable asset and a protected commodity.

Second, privacy may be desired to mitigate the social stigma associated with certain legal but sensitive activities, such as mental health consultations or bankruptcy proceedings. Although legal, these activities can carry a stigma that adversely affects a person's social standing, and thus their economic opportunities.

Third, and most germane to this study, privacy can also shield illicit or fraudulent behavior. The anonymity enabled by certain economic mechanisms may protect individuals from reputational damage or legal consequences if such activities were exposed.

These *mixed motives* present a paradox wherein privacy safeguards legitimate desires for anonymity and autonomy while at the same time facilitating potential illegal activity or misconduct.

Our approach to understanding the value of privacy in economic transactions is to elicit individuals' willingness to pay (WTP) to avoid being observed in reporting on economic activities.[1] Considering the mixed mo-

[1]While the well-known willingness-to-pay and willingness-to-accept gap (see, e.g., Plott and Zeiler, 2005, for a review) is also found in the valuation of privacy (Acquisti

tives that people may have for demanding privacy, we elicit the WTP for privacy in a setting where misconduct is possible. In contrast to most research exploring the value of privacy (Prince and Wallsten, 2022; Savage and Waldman, 2015; Skatova et al., 2023; Tsai et al., 2011), we elicit people's WTP for privacy in an incentive-compatible manner. Indeed, Bendorf and Normann (2018) show a large "hypothetical bias" in people's willingness to disclose their personal information: namely, while five of six respondents in a non-incentivized survey refused to disclose their personal information, only one of six participants did the same in an incentivized experiment. Our incentivized experiment does not suffer from a similar bias.

Our findings have important implications for understanding people being accepting of or reluctant about the adoption of media of exchange or institutions that forego privacy rights. Specifically, we ask three questions. (1) How much are individuals willing to pay for privacy in economic transactions? (2) Does behavior differ if individuals do not have a private option or cannot pay for privacy? (3) Does the value of privacy differ across countries? If so, what are the correlates of those differences?

Using the truth-telling task pioneered by Fischbacher and Föllmi-Heusi (2013), our experimental design directly reveals how much value people place on privacy, or the unobservability of their economic activities in order to engage in lying or other forms of immoral behavior, in an incentive-compatible manner. Specifically, in our main experiment, subjects flip a fair coin 10 times and report the number of heads and tails. For each heads that a subject reports, they receive 100 points. Thus, by reporting

et al., 2013), we are not interested in this particular behavioral aspect in this current paper.

10 heads, they earn the maximum of 1000 points. There is no explicit penalty for misreporting.[2]

For this task, subjects can choose between using a fair coin provided on our experimental software platform (i.e., a virtual coin) for free or using their *own* coin by paying a fee. The main difference between the two options is whether or not the consistency (or gap) between the realized and reported outcomes of the coin flips can be verified. Such a verification can be done if the virtual coin is used, but not if participants' own coin is used.

We elicit subjects' WTP to use their own coin instead of the virtual coin using the Becker–DeGroot–Marschak (BDM) mechanism (Becker et al., 1964). To the best of our knowledge, our study is the first to elicit and compare the WTP for privacy in economic transactions across countries – specifically, China, Japan, and the United States – in a setting where there is some potential monetary benefit for dishonest behavior.[3]

Our findings reveal that people's WTP to use their own coin in order to "avoid the spotlight" is positive and economically sizable; on average, it is

[2]There is a large experimental literature on lying that explores behavior in tasks like coin-flipping and dice-rolling, where participants often misreport outcomes to their advantage, especially under conditions of anonymity (Fries et al., 2021; Gneezy et al., 2018). However, the extent of dishonesty appears to be limited by concerns over self-image and social perception. Gächter and Schulz (2016) found that in countries with prevalent rule violations, participants were more likely to report favorable outcomes. For a comprehensive review of this literature, see the meta-analysis by Abeler et al. (2019).

[3]While China (Shanghai) is included in the larger scale cross-society study of Gächter and Schulz (2016), Japan and the United States are not. In terms of the prevalence of violation of rule index (for 2003) constructed by Gächter and Schulz (2016), China, Japan, and the United States score 0.23, $-2.25$, and $-2.78$, respectively. Thus, according to their results, the reported number of heads in our study should be highest in China, followed by Japan, and then the United States among these three countries. However, our focus and main outcome variable – the WTP to use one's own coin instead of the virtual coin – is different from the focus of Gächter and Schulz (2016), and it is not clear whether we would obtain a similar ordering among the three countries in terms of elicited WTP.

more than 30% of the expected monetary gain from lying across the three countries and is largest in Japan where, on average, it is more than 40% of such a gain. The observed high values placed on privacy in economic transactions suggest the need for a proper balance between fraud prevention and ensuring privacy in our increasingly digital economy.

## 2 Experimental Design

In our experiment, as in Cohn et al. (2014), participants flip a fair coin 10 times and report the count of heads and tails, which together must add up to 10. Participants earn 100 points for each heads reported. Thus, a report of 10 heads yields the maximum payoff of 1,000 points. At the conclusion of the experiment, these points are converted into local currency using a pre-specified exchange rate that adjusts for purchasing power differences across countries, ensuring that all participants face roughly equivalent monetary incentives. Specifically, 100 points equated to 100 JPY in Japan, 1.00 USD in the United States, and 4 RMB in China.

There is no explicit penalty for misreporting the number of heads and tails in any treatment of our study. Therefore, the predicted, profit-maximizing behavior by *homo economicus* participants is to always report 10 heads. A meta-study of such truth-telling experiments by Abeler et al. (2019), however, shows that most participants do not lie to such an extreme degree; rather, they partially over-report the number of heads relative to expected numbers. What we add to this task is a willingness to pay elicitation to use one's own coin, along with some further treatments.

Specifically, in our main treatment (CHOICE), subjects can complete

the task of flipping a coin 10 times using a virtual coin provided on our experimental software platform at no cost. Alternatively, they can choose to use their *own* coin to complete the 10 coin flips, but only if they pay a fee. Subjects are told that if they use the virtual coin, the experimenters can check the realized outcomes of the virtual coin flip later. By contrast, if they use their own coin, it is not possible for the experimenter to observe the outcome of those coin flips. Subjects are also told that regardless of the coin they use, the experimenters rely only on their own self-report of the outcome of the coin flip – the number of heads and tails that *they* report to the experimenter – to determine their payment.

Prior to the coin flip task, we use the BDM mechanism to elicit subjects' WTP for the right to use their own coin to complete the coin flip task. As noted, there is no cost to using the virtual coin. Specifically, subjects submit their $WTP^i$ in 10-point increments, $\{0, 10, 20, \ldots, 490, 500\}$. Note that the upper bound of 500 points in the WTP elicitation is the expected gain (in points) from using one's own coin and reporting 10 as the number of heads. Once participants submit their $WTP^i$, the computer randomly draws a price (in points) $p^i \in \{10, 20, \ldots, 490, 500\}$ for each participant. If $p^i \leq WTP^i$, the subject $i$ pays $p^i$ (out of their experimental earnings) and uses his or her own coin, otherwise, the virtual coin is used at no cost. Subjects who do not want to use their own coin could simply state that their WTP was zero, thereby ensuring that they would use the virtual coin, and this possibility was carefully explained to them.[4] Given that using the

[4]One may be concerned about our use of the BDM method because it is known to be confusing for participants (Cason and Plott, 2014), especially when payoffs are presented in points rather than in local currency. To facilitate participants' understanding of the BDM mechanism, we have instructed participants to methodically consider their WTP. Specifically, we suggest that they consider whether they are willing to pay 10 points to use their own coin instead of the virtual coin. If the answer is no, they should submit

virtual coin is free, that payoffs are determined solely by participants' self-reported number of heads, and that there is no penalty for misreporting, a purely rational economic agent (i.e., *homo economicus*) who had no social image or privacy concerns would maximize her payoff by reporting 10 heads and expressing a WTP of zero, thereby always using the virtual coin.

We thus interpret the elicited WTP as reflecting participants' privacy concerns regarding the use of the virtual coin versus their own. To formalize this logic, we adopt the framework proposed by Abeler et al. (2019), which identifies three determinants of reporting behavior in experiments of this type: (1) material gain, (2) self-image concerns, and (3) social-image concerns. In our study, we refer to social-image concern as the privacy concern. Following this framework, the utility of reporting the number of heads, $H$, when the actual realization is $R$, $u^i(H|R)$, can be written as

$$\begin{aligned} u^i(H|R) &= \pi^i(H) - c^i(H-R) - \gamma^i(H-R) && \text{if using the virtual coin,} \\ u^i(H|R) &= \pi^i(H) - c^i(H-R) && \text{if using one's own coin.} \end{aligned}$$

Here, $\pi^i(H)$ is the monetary gain, $c^i(H-R)$ is the cost associated with self-image concerns, and $\gamma^i(H-R)$ is the privacy concern of reporting $H$

zero. If the answer is yes, they should next consider whether they are willing to pay 20 points to use their own coin instead of the virtual coin. If the answer is no, they should submit 10. If the answer is yes, they proceed to considering 30 points, and so on. We instructed subjects to repeat this exercise until their answer was no. We also had two questions in our comprehension quiz to check their understanding of the BDM mechanism. As for the possibility of additional confusion due to the use of points instead of the local currency, in our pilot sessions in Japan, we used local currency. In those sessions, each heads accounted for 100 JPY instead of 100 points, and in the BDM procedure, participants were asked to submit their WTP in increments of 10 JPY. The distribution of WTPs in the pilot sessions is not significantly different from the one we report below using points. The results of the pilot sessions are available upon request. The reason for using points in the experiment reported in this paper is to enable international comparisons: that is, to homogenize the instructions in points and adjust the exchange rate to the local currency based on purchasing power parity.

heads when the actual realized number of heads was $R$. Intuitively, the first order derivatives of $c^i(H-R)$ and $\gamma^i(H-R)$ should be non-negative: that is, the cost of social image concerns and privacy concerns should be greater when the participant deviates from honest reporting to a larger degree.[5]

When choosing their WTP to use their own coin instead of using the virtual coin for free, each subject $i$ would compare the expected maximized utility of using the virtual coin with that of using his or her own coin. Therefore, the submitted WTP should be equivalent to the difference between the monetary value of the two maximized expected utilities, and that is primarily driven by the cost associated with privacy concerns in using the virtual coin, unless the self-image concern dominates all the other considerations.[6]

In addition to the CHOICE treatment, we also design two *control* treatments, VIRTUAL and OWN, where subjects are not given a choice regarding the type of coin they can use. In the VIRTUAL treatment, subjects must use the virtual coin. In the OWN treatment, they must use their own coin. In these two treatments, therefore, there is no elicitation of WTP to use their own coin instead of the virtual coin, as there is no choice of the

[5]Grossman (2015) also studies how self-image and social image motives may lead to different actions and outcomes in behavioral games. Specifically, he varies the possibility that the dictator's choice is implemented in a dictator game. He suggests that when outcomes are publicly visible, individuals primarily motivated by social image will not alter their contributions. In contrast, those driven by self-image are likely to increase their contributions as the probability that the dictator's decision will be implemented rises.

[6]In addition to social image concerns, a participant may also submit a positive WTP for using their own coin because of the illusion of control (Langer, 1975). Another possibility is that participants submit a positive WTP value because they do not believe the virtual coin is a fair coin, even though the coin is in fact fair, and we inform subjects of this fact in the instructions. Although we cannot eliminate this possibility for submitting a positive WTP, the fact that we have conducted our experiment in experimental laboratories where no deception is the rule and participants are aware of this rule should reduce the impact of such a consideration.

type of coin that will be used. Still, as in the CHOICE treatment, subjects in these two control treatments report the number of heads and tails and are paid solely on the basis of their own reports.

The literature (see, e.g., Abeler et al., 2019; Fries et al., 2021; Gneezy et al., 2018) suggests that participants tend to lie more in more anonymous situations. García-Gallego et al. (2020) also find that people behave differently in the corruption game when they are observed by an audience compared to when there is no audience. In our experiment, this suggests that participants report a larger number of heads in OWN than in VIRTUAL due to their social-image concerns. While verification of this hypothesis using our control treatments is interesting (see Appendix B for the result of such comparisons), our main purpose in introducing these two control treatments is to explore whether and how offering subjects a choice between a virtual coin and their own coin, with the latter carrying a fee, affects their reporting behavior relative to the control cases, where there is no choice of which coin to use.

Note that in the CHOICE treatment, where participants can pay to use their own coin, two potential effects could increase the reported number of heads from using their own coin as compared to the OWN treatment, where participants use their own coin for free. These effects are "sorting" (Erkal et al., 2011; Lazear et al., 2012; Grossman and van der Weele, 2017; Stüber, 2020) and "licensing." Regarding sorting, the higher the WTP submitted by a participant in CHOICE, the higher the chance of using her own coin. Thus, those with a higher willingness to use their own coin and misreport are more likely to be sorted into using their own coin in the CHOICE treatment than those assigned to the OWN treatment. Regarding

licensing, the fact that participants have paid a price to use their own coin in CHOICE may have justified their reporting a higher number of heads in the CHOICE treatment relative to the OWN treatment, where they do not pay anything to use their own coin.

When the virtual coin is used in the CHOICE treatment, the effect of having had the option to pay to use one's own coin on reporting behavior is less clear. By contrast with the case where one has paid to use one's own coin, there is no licensing effect as the virtual coin can be used for free. However, when it comes to sorting, there can be two types of participants who submit a low WTP and sort themselves into use of the virtual coin in the CHOICE treatment: those with lower privacy concerns (who may still misreport using the virtual coin) and those with very high self-image concerns relative to the privacy concerns, who do not misreport regardless of the coin used. While the former type increases the reported number of heads from use of the virtual coin in the CHOICE treatment relative to the VIRTUAL treatment, the latter type reduces it. Thus, the overall sorting effect depends on the composition of these two types among all participants and the strength of these two sorting forces.

In all treatments, participants reported the number of heads and tails in each of the 10 trials and then completed a questionnaire. Besides providing details about their age and gender, they answered questions concerning ethical behavior and the government's authority to monitor economic activities (see Appendix A). The English instructions were translated into Japanese and Chinese by our research assistants. We then asked different people to translate the instructions back into English to ensure consistency

of meaning.[7]

## 2.1 Implementation

The experiment was conducted online between October and December 2023 in Osaka (Japan), Irvine, California (United States), and Wuhan (China).[8] A total of 360 students from local universities (120 in each country) participated. In each location, we used Zoom software to coordinate activity. Subjects arrived via the Zoom waiting room. One by one, we privately welcomed them and checked (via video) that they had brought their own coin to the study as they had been instructed to do (except for the treatment with only a virtual coin). They were then given a numerical ID to be used during the experiment to maintain their anonymity. Once these tasks were completed, they were sent back to the waiting room, where they waited until the start of the experiment.

Once all subjects had been individually welcomed, they were brought back to the main room of Zoom, where the experimenter gave general instructions and sent each subject a link to the experimental platform. After clicking on the link, subjects read through the instructions for the experiment online at their own pace and then completed a comprehension quiz. Once they had answered all the quiz questions correctly, the experiment started. In the CHOICE treatment with a WTP elicitation, participants first underwent two practice rounds to learn how to submit their WTP and its impact on the type of coin – own or virtual – they would use. One practice round featured a high price realization and the other a low price

[7]The English instructions are available in the online supplementary material; the Chinese and Japanese translations are available upon request.

[8]The experiment was programmed using oTree (Chen et al., 2016).

realization. Note that these practice rounds did not involve flipping a coin. Participants submitted their WTP and received feedback about the chosen price and whether they would have used their own coin or the virtual coin if these were not practice rounds.[9] During the experiment, subjects had their cameras and microphones turned off.

The experiment lasted about 25 minutes on average, including the post-experimental questionnaire. Subjects, on average, earned 13.30 USD, 1130 JPY, and 50 RMB, including 7 USD, 500 JPY, and 20 RMB show-up fees in Irvine, Osaka, and Wuhan, respectively.[10]

# 3 Results

## 3.1 Descriptive statistics

The descriptive statistics regarding participants' characteristics in each location and treatment are reported in Table 1, as are $p$-values from the Kruskal-Wallis (KW) test for differences across the three locations.

There are some notable differences in participants' characteristics across the three locations. There were significantly fewer female participants in Osaka than in Wuhan and Irvine, especially in the OWN and VIRTUAL treatments. Participants in Irvine were significantly more willing to take risks than those in Osaka and Wuhan. Those in Wuhan were more accepting of unethical behaviors and of the government's right to monitor people than those in Osaka and Irvine. We will, therefore, control for these

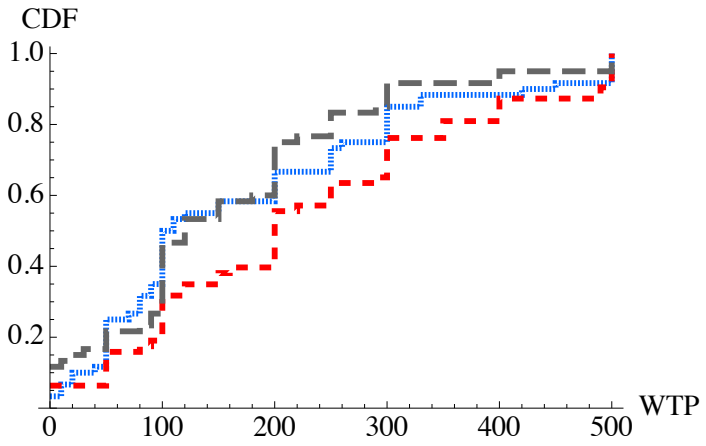
[9]We introduced these practice rounds, in addition to questions about WTP and payoffs in the comprehension quiz, to ensure that subjects adequately understood the BDM procedure, which can be confusing (see, e.g., Cason and Plott, 2014).

[10]While performance-based payments were equalized based on purchasing power parity, we respected the standard show-up fees used in each location so as to attract participants who normally participate in experiments conducted in each location.

Table 1: Mean (standard deviation) of participants' characteristics in each treatment and location

| Treatment | CHOICE | | | | OWN | | | | VIRTUAL | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Wuhan | Irvine | Osaka | $p$-value[a] | Wuhan | Irvine | Osaka | $p$-value[a] | Wuhan | Irvine | Osaka | $p$-value[a] |
| No. obs. | 60 | 60 | 63 | | 30 | 30 | 30 | | 30 | 30 | 27 | |
| Proportion female | 0.55 (0.50) | 0.52 (0.50) | 0.38 (0.49) | 0.1385 | 0.73 (0.45) | 0.70 (0.47) | 0.33 (0.48) | 0.0024 | 0.50 (0.51) | 0.60 (0.50) | 0.30 (0.47) | 0.0689 |
| Age | 21.12 (2.13) | 21.58 (3.46) | 22.60 (3.82) | 0.0204 | 20.93 (1.91) | 20.13 (2.49) | 22.47 (2.86) | 0.0004 | 21.4 (2.01) | 20.6 (2.70) | 22.63 (3.21) | 0.0063 |
| Risk-taking | 4.13 (2.62) | 5.58 (2.20) | 4.40 (2.32) | 0.0034 | 4.07 (2.45) | 5.87 (2.01) | 4.33 (2.43) | 0.0037 | 3.63 (2.39) | 5.33 (2.44) | 4.33 (2.22) | 0.0262 |
| Ethics[b,d] | 6.38 (1.89) | 7.79 (1.31) | 7.45 (1.35) | 0.0001 | 6.29 (1.78) | 7.30 (1.54) | 7.99 (1.18) | 0.0007 | 7.07 (1.86) | 7.16 (1.66) | 7.85 (1.30) | 0.1239 |
| Claiming benefit[d] | 4.90 (2.89) | 2.85 (1.94) | 3.29 (2.51) | 0.0002 | 5.17 (2.67) | 3.73 (1.74) | 3.31 (2.32) | 0.0112 | 3.97 (2.57) | 3.77 (2.14) | 2.67 (2.17) | 0.0240 |
| Cheating tax[d] | 3.36 (2.69) | 2.73 (2.02) | 2.57 (2.18) | 0.3227 | 3.53 (2.50) | 3.03 (1.97) | 1.62 (0.82) | 0.0023 | 2.57 (2.30) | 3.33 (2.38) | 2.11 (1.83) | 0.0283 |
| Telling truth[d] | 5.40 (2.21) | 6.93 (1.98) | 6.21 (1.98) | 0.0007 | 5.57 (1.77) | 6.67 (1.97) | 6.90 (2.11) | 0.0080 | 5.73 (2.57) | 6.57 (2.06) | 6.33 (1.84) | 0.2814 |
| Government's right[c] | 2.65 (0.67) | 1.98 (0.53) | 2.25 (0.71) | 0.0001 | 2.78 (0.62) | 2.22 (0.35) | 2.33 (0.66) | 0.0006 | 2.67 (0.69) | 1.98 (0.63) | 2.25 (0.70) | 0.0006 |
| Video surveillance | 1.78 (0.85) | 2.53 (0.82) | 2.17 (0.87) | 0.0001 | 1.70 (0.65) | 2.00 (0.59) | 2.20 (0.81) | 0.0271 | 1.90 (0.92) | 2.20 (0.96) | 2.19 (1.00) | 0.3851 |
| Internet | 2.68 (0.85) | 3.44 (0.60) | 3.10 (0.82) | 0.0001 | 2.57 (0.86) | 3.13 (0.68) | 2.90 (0.76) | 0.0195 | 2.60 (0.86) | 3.37 (0.72) | 3.15 (0.82) | 0.0019 |
| Bank account | 2.58 (0.94) | 3.14 (0.92) | 2.98 (0.85) | 0.0041 | 2.40 (0.93) | 3.20 (0.61) | 2.90 (0.88) | 0.0019 | 2.50 (0.94) | 3.50 (0.82) | 2.93 (0.96) | 0.0002 |
| No. reporting truthfully | 8.02 (6.05) | 9.23 (4.95) | 8.25 (5.04) | 0.3640 | 6.23 (5.20) | 9.83 (3.57) | 9.50 (6.10) | 0.0088 | 5.90 (6.32) | 10.90 (5.74) | 10.11 (6.44) | 0.0046 |
| No. WTP>0 | 13.5 (5.89) | 12.78 (4.92) | 15.35 (5.14) | 0.0095 | | | | | | | | |
| Payoff | 714.33 (238.93) | 619.00 (214.42) | 626.19 (205.36) | 0.0355 | 796.67 (158.62) | 636.67 (140.16) | 640.00 (201.03) | 0.0005 | 776.67 (256.88) | 636.67 (245.63) | 607.41 (218.26) | 0.0151 |

Note:
a: $P$-values are for comparison across countries (Kruskal-Wallis test).
b: Ethics = ((11 - claiming benefit) + (11 - cheating tax) + telling truth)/3.
c: Government's right = ((5-video surveillance) + (5-internet) + (5-bank account))/3.
d: Due to a technical problem, some answers were not recorded; thus n=58 in Wuhan (CHOICE), n=59 in Irvine (CHOICE), n=29 in Osaka (OWN)




| | Wuhan | Irvine | Osaka |
|---|---|---|---|
| Mean | 159.83 | 177.00 | 225.56 |
| (Std. Dev.) | (126.81) | (146.20) | (150.48) |

Figure 1: Cumulative distributions of willingness to pay to use own coin in Osaka (red dashed), Irvine (cyan dots), and Wuhan (long gray dash).

individual characteristics in our analyses below.

## 3.2 Willingness to pay to use own coin

We begin with the main variable of interest: subjects' WTP to use their own coin instead of the virtual coin. We then present the reporting behavior of participants conditional on the coin they actually used.

Figure 1 shows cumulative distribution functions (CDFs) of subjects' WTP to use their own coin instead of using the virtual coin for free in Osaka (red dash), Irvine (cyan dots), and Wuhan (long gray dash). Below these CDFs is a table reporting the mean and standard deviation (std. dev.) of the WTP in each location.

We see that the mean (std. dev.) WTP in Osaka is 225.56 points (150.48), which is more than 40% of the expected gain (500) from misreporting. This is marginally significantly higher than the WTP in Irvine:

Table 2: Willingness to pay (WTP) to use own coin: Results of ordinary least square regressions.

| | (1) | (2) | (3) | (4) | (5) |
|---|---|---|---|---|---|
| Wuhan | −65.722** | −67.102** | −67.290** | −58.945** | −58.320** |
| | (25.56) | (27.22) | (26.74) | (26.73) | (26.09) |
| Irvine | −48.556* | −65.151** | −61.368** | −43.901* | −37.457 |
| | (25.56) | (26.05) | (25.64) | (26.41) | (25.86) |
| Female | | −21.482 | −12.568 | −19.416 | −9.156 |
| | | (20.54) | (20.46) | (20.09) | (19.89) |
| Age | | −0.774 | −0.164 | 0.183 | 0.970 |
| | | (3.62) | (3.56) | (3.55) | (3.47) |
| Risk | | 20.230*** | 20.412*** | 16.569*** | 16.400*** |
| | | (4.41) | (4.33) | (4.48) | (4.37) |
| Ethics | | −4.511 | −1.954 | −6.408 | −3.719 |
| | | (6.84) | (6.78) | (6.71) | (6.61) |
| Gov. right | | 15.634 | 17.117 | 16.638 | 18.412 |
| | | (16.13) | (15.86) | (15.77) | (15.40) |
| No. truthful | | | −5.048*** | | −5.691*** |
| | | | (1.89) | | (1.85) |
| No. WTP>0 | | | | 5.820*** | 6.417*** |
| | | | | (1.93) | (1.89) |
| Constant | 225.556*** | 160.747 | 162.034 | 76.945 | 69.801 |
| | (17.85) | (110.49) | (108.58) | (111.48) | (108.83) |
| Adjusted $R^2$ | 0.028 | 0.132 | 0.162 | 0.171 | 0.210 |
| $N$ | 183 | 180 | 180 | 180 | 180 |
| $P$-value[a] | 0.5078 | 0.9469 | 0.8372 | 0.6033 | 0.4615 |

* p<0.10, ** p<0.05, *** p<0.01
a: $p$-values for testing $H_0$: Wuhan = Irvine (Wald test).

mean (std. dev.) 177.0 points (146.20), $p$=0.0538, Mann-Whitney (MW) test. It is significantly higher than in Wuhan: mean (std. dev.) 159.83 points (126.81), $p$=0.0148, MW. WTPs are not significantly different between Irvine and Wuhan ($p$=0.7766, MW).

Table 2 reports the results of ordinary least squares (OLS) regressions of WTP on location dummies and on individual characteristics and subjects' answers to our questions. The results largely confirm the non-parametric tests. Compared with Osaka (the baseline), the WTP is significantly lower, at the 5% level, in Wuhan and Irvine after controlling for demographics, risk

preferences, ethical considerations, and participants' views regarding the government's rights in column (2). In column (3), in addition to these, we control for the belief about how many of 20 randomly selected participants truthfully report the outcome of their coin flips. In column (4), instead of beliefs about others' truthful reporting, we control for the belief about how many of 20 randomly selected participants submit a strictly positive WTP to use their own coin. In column (5), we control for both of the beliefs in columns (3) and (4). While the estimated coefficient on the Wuhan dummy remains significantly negative at the 5% level in all specifications, the Irvine dummy becomes only marginally significant in column (4) and loses significance in column (5). In all of these specifications, there is no significant difference in WTP between Wuhan and Irvine (see the bottom row of Table 2).

Among the individual characteristics controlled for in column (2) – demographics, risk preferences, views on ethics, and views about the government's rights – only the self-reported willingness to take risks is statistically significant. Specifically, a higher willingness to take risks is associated with a higher WTP to use one's own coin. This positive and significant coefficient on the risk measure aligns with findings from the corporate governance literature showing that corporations involved in risky activities often employ expensive accounting obfuscations and earnings management practices in order to conceal those risks (see, e.g., Hadani et al., 2011; Li, 2008).

The estimated coefficient of the belief about others' truthful reporting is negative and significant in columns (3) and (5). That is, the more likely participants believe that others report truthfully, the lower their WTP to use their own coin. The estimated coefficient of the belief about others'

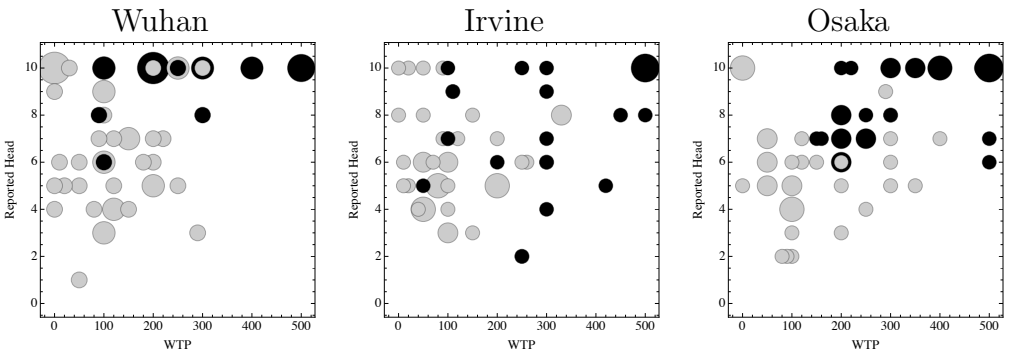
submitting a positive WTP value is positive and significant in columns (4) and (5). That is, the more likely participants believe that others submit a strictly positive WTP to use their own coin, the higher their own WTP. We interpret these two findings as resulting from *social norm considerations* (Cialdini and Goldstein, 2004; Gächter and Schulz, 2016; Serdarevic, 2021). In the first case, participants who believe that others are more likely to report truthfully may be less likely to misreport themselves, in accordance with their perception of social norms. Consequently, their WTP to use their own coin is lower. In the second case, those who believe that others are more likely to report a positive WTP value will seek to conform to this norm and submit a higher WTP.

## 3.3 Reporting behavior

Let us turn next to the actual reported number of heads. Figure 2 uses bubble plots to show the relationship between subjects' WTP values (horizontal axis) and their reported number of heads (vertical axis) depending on the coin used (own coin in black and virtual coin in gray) in each of the three locations. Reflecting the higher WTP submitted by the Osaka subjects, the number of subjects who used their own coin instead of the virtual coin is higher in Osaka as compared to Wuhan and Irvine.

There are several things to note in these figures. In all locations, some subjects submitted a WTP of 0 and reported 10 heads (as *homo economicus* would do), as can be seen in the upper left corner of Figure 2. We also see in the upper right corner that some subjects submitted a WTP of 500 and reported 10 heads.

There are positive correlations between WTP and the reported number




| | Own | Virtual |
|---|---|---|
| $N$ | 17 | 43 |
| % | 28.33% | 71.67% |

| | Own | Virtual |
|---|---|---|
| $N$ | 19 | 41 |
| % | 31.67% | 68.33% |

| | Own | Virtual |
|---|---|---|
| $N$ | 29 | 34 |
| % | 46.0% | 54.0% |

Figure 2: Submitted WTP and the reported number of heads depending on the coin used: Own coin (black); virtual coin (gray). The size of the point is proportional to the number of observations for the same WTP-report combination.

of heads when the own coin is used if we pool the data from all three locations without controlling for participants' belief about reporting behavior (columns All (1) and All (2) in Table 3). However, if we consider each location separately, these correlations are no longer significant (columns Wuhan (1)–(3) and Irvine (1)–(3)) except for Osaka, where the correlation remains marginally significant even when controlling for individual characteristics (columns Osaka (1) and (2)) but loses significance when also controlling for belief about others' reporting behavior (column Osaka (3) in Table 3). When the virtual coin is used, there is no significant relationship between WTP and the reported number of heads in all three locations (see the bottom row of Table 3 that reports $p$-values for the test).

There is a marginally significant positive relationship between the price subjects actually paid and the reported number of heads in Irvine when controlling for individual characteristics (see columns Irvine (2) and (3) in

Table 3: Reported number of heads and willingness to pay (WTP): Regression results

| | All | | | Wuhan | | | Irvine | | | Osaka | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | (1) | (2) | (3) | (1) | (2) | (3) | (1) | (2) | (3) | (1) | (2) | (3) |
| Wuhan | 1.014*** | 1.036** | 0.987** | | | | | | | | | |
| | (0.38) | (0.44) | (0.40) | | | | | | | | | |
| Irvine | −0.073 | −0.047 | 0.008 | | | | | | | | | |
| | (0.38) | (0.42) | (0.38) | | | | | | | | | |
| WTP | 0.005** | 0.004** | 0.002 | 0.003 | 0.003 | 0.001 | 0.005 | 0.006 | 0.005 | 0.006** | 0.005* | 0.002 |
| | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) |
| Virtual coin used | −0.943 | −1.150 | −1.434** | −1.900 | −2.864* | −2.535** | 0.033 | 0.023 | −0.149 | −0.908 | −1.337 | −1.917** |
| | (0.71) | (0.74) | (0.67) | (1.34) | (1.43) | (1.21) | (1.28) | (1.37) | (1.34) | (1.10) | (1.05) | (0.94) |
| WTP× | −0.006** | −0.005* | −0.002 | −0.004 | 0.001 | 0.005 | −0.006 | −0.005 | −0.004 | −0.006 | −0.005 | −0.001 |
| Virtual coin used | (0.00) | (0.00) | (0.00) | (0.01) | (0.01) | (0.01) | (0.01) | (0.01) | (0.01) | (0.00) | (0.00) | (0.00) |
| Female | | 0.036 | 0.281 | | −0.043 | 0.176 | | 0.239 | 0.496 | | −0.244 | 0.007 |
| | | (0.33) | (0.30) | | (0.61) | (0.51) | | (0.63) | (0.63) | | (0.47) | (0.42) |
| Age | | −0.000 | 0.037 | | 0.107 | 0.119 | | 0.107 | 0.150 | | −0.076 | −0.032 |
| | | (0.06) | (0.05) | | (0.15) | (0.13) | | (0.15) | (0.14) | | (0.06) | (0.06) |
| Risk | | −0.034 | −0.002 | | −0.342** | −0.248** | | −0.109 | −0.133 | | 0.343*** | 0.327*** |
| | | (0.07) | (0.07) | | (0.13) | (0.11) | | (0.17) | (0.17) | | (0.10) | (0.09) |
| Ethics | | −0.083 | 0.020 | | −0.152 | 0.162 | | −0.141 | −0.201 | | 0.077 | 0.092 |
| | | (0.11) | (0.10) | | (0.17) | (0.16) | | (0.24) | (0.24) | | (0.18) | (0.16) |
| Gov. right | | −0.114 | −0.081 | | 0.122 | 0.051 | | −0.490 | −0.408 | | −0.192 | −0.115 |
| | | (0.26) | (0.23) | | (0.48) | (0.40) | | (0.61) | (0.60) | | (0.32) | (0.28) |
| No. truthful | | | −0.180*** | | | −0.221*** | | | −0.110* | | | −0.177*** |
| | | | (0.03) | | | (0.05) | | | (0.06) | | | (0.04) |
| Constant | 6.891*** | 8.051*** | 7.983*** | 8.710*** | 8.824** | 7.772** | 6.172*** | 6.187 | 6.649* | 6.611*** | 7.124*** | 8.031*** |
| | (0.67) | (1.95) | (1.76) | (1.20) | (4.14) | (3.50) | (1.15) | (4.00) | (3.92) | (0.97) | (2.50) | (2.22) |
| Adjusted $R^2$ | 0.266 | 0.251 | 0.386 | 0.220 | 0.290 | 0.494 | 0.103 | 0.033 | 0.072 | 0.397 | 0.481 | 0.594 |
| $N$ | 183 | 180 | 180 | 60 | 58 | 58 | 60 | 59 | 59 | 63 | 63 | 63 |
| $p$-value[a] | 0.601 | 0.707 | 0.821 | 0.811 | 0.385 | 0.136 | 0.681 | 0.943 | 0.731 | 0.891 | 0.930 | 0.735 |

* $p$ <0.10, ** $p$ <0.05, *** $p$ <0.01

a $p$-value for testing $H_0$: WTP + WTP × Virtual Coin Used = 0 (Wald test).

Table 4: Reported number of heads and price: Results of ordinary least square regressions.

| | All | | | Wuhan | | | Irvine | | | Osaka | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | (1) | (2) | (3) | (1) | (2) | (3) | (1) | (2) | (3) | (1) | (2) | (3) |
| Wuhan | 1.072* | 1.256** | 1.032* | | | | | | | | | |
| | (0.54) | (0.59) | (0.57) | | | | | | | | | |
| Irvine | −0.728 | −1.258* | −1.064* | | | | | | | | | |
| | (0.53) | (0.63) | (0.61) | | | | | | | | | |
| Price | 0.004* | 0.003 | 0.001 | 0.001 | 0.001 | −0.000 | 0.007 | 0.010* | 0.010* | 0.003 | 0.003 | −0.001 |
| | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.01) | (0.01) | (0.00) | (0.00) | (0.00) |
| Female | | −0.035 | 0.181 | | −0.227 | 0.069 | | 1.265 | 1.387 | | 0.414 | 0.483 |
| | | (0.48) | (0.47) | | (0.55) | (0.34) | | (1.27) | (1.27) | | (0.70) | (0.64) |
| Age | | −0.051 | −0.023 | | 0.029 | 0.131 | | 0.291 | 0.284 | | −0.064 | −0.031 |
| | | (0.06) | (0.06) | | (0.12) | (0.07) | | (0.23) | (0.23) | | (0.07) | (0.07) |
| Risk | | 0.046 | 0.010 | | −0.056 | −0.103 | | −0.211 | −0.377 | | 0.257* | 0.280** |
| | | (0.11) | (0.10) | | (0.11) | (0.07) | | (0.27) | (0.31) | | (0.14) | (0.13) |
| Ethics | | −0.003 | −0.034 | | −0.171 | −0.052 | | −0.949* | −1.110* | | 0.342 | 0.211 |
| | | (0.17) | (0.16) | | (0.18) | (0.11) | | (0.51) | (0.53) | | (0.23) | (0.22) |
| Gov. right | | −0.573* | −0.667** | | −0.128 | −0.460* | | −2.120* | −1.846 | | −0.158 | −0.268 |
| | | (0.34) | (0.33) | | (0.34) | (0.22) | | (1.06) | (1.08) | | (0.41) | (0.38) |
| No. truthful | | | −0.106** | | | −0.130*** | | | −0.118 | | | −0.147** |
| | | | (0.04) | | | (0.03) | | | (0.11) | | | (0.07) |
| Constant | 7.988*** | 10.548*** | 11.384*** | 9.417*** | 10.914*** | 9.611*** | 6.892*** | 12.689* | 15.633** | 8.110*** | 6.198* | 8.071** |
| | (0.46) | (2.30) | (2.23) | (0.44) | (2.89) | (1.78) | (0.78) | (5.84) | (6.41) | (0.53) | (2.99) | (2.88) |
| Adjusted $R^2$ | 0.139 | 0.166 | 0.233 | −0.059 | −0.296 | 0.526 | 0.055 | 0.260 | 0.270 | 0.005 | 0.073 | 0.213 |
| $N$ | 65 | 63 | 63 | 17 | 16 | 16 | 19 | 18 | 18 | 29 | 29 | 29 |

* $p$ <0.10, ** $p$ <0.05, *** $p$ <0.01

Table 4), but not in Osaka and Wuhan.

## 3.4 Effect of sorting and licensing on the reporting behavior

The panels in Figure 3 CDFs of the reported number of heads between the CHOICE treatment and either the OWN or the VIRTUAL treatment and depending on the coin used for each of the three locations. The top panel (A) compares CHOICE with OWN when the own coin is used. The middle panel (B) compares CHOICE with VIRTUAL when the virtual coin is used. The bottom panel (C) compares CDFs regarding the number of *misreports* when the virtual coin is used in CHOICE with VIRTUAL. Note that because the realized number of heads is recorded in the data when the virtual coin is used, we are able to compute the number of misreports as the difference between the realized and reported number of heads.

When the subject's own coin is used in the CHOICE treatment (shown in red in Figure 3 (A)), the reported number of heads is significantly larger than in the OWN treatment. This is so even after controlling for individual characteristics, except for Irvine (the estimated coefficients of OWN in Table 5 are negative and significant save for Irvine (2) and (3)). This finding could be the result of two forces of sorting and licensing that we discuss above.

When the virtual coin is used, the reported numbers of heads and the extent of misreporting (panels B and C) are not significantly different between the CHOICE and VIRTUAL treatments, except for the Wuhan subjects. In Wuhan, the reported number of heads and the extent of misreporting are both significantly greater in the VIRTUAL treatment compared to

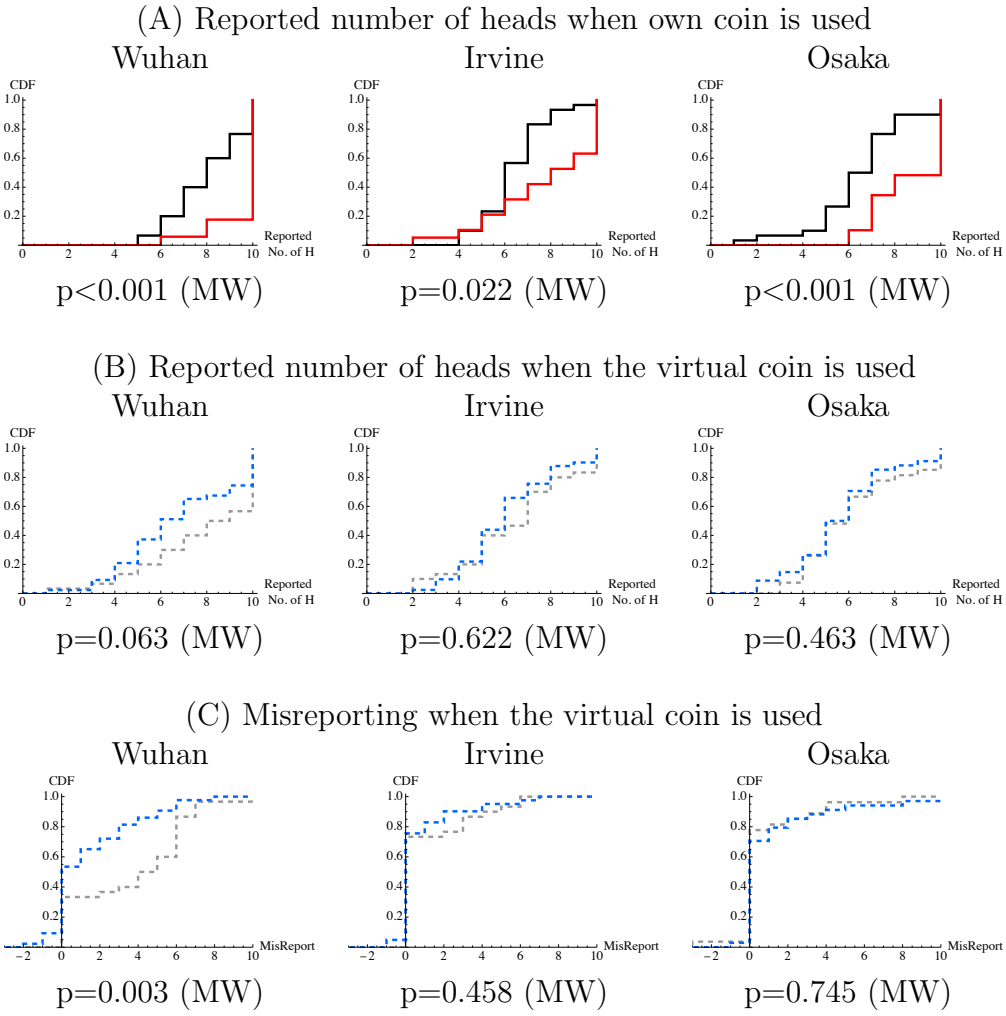



Figure 3: Distribution of the reported number of heads by treatment conditions: (A) when own coin is used, (B) when the virtual coin is used. (C) depicts the extent of misreporting (the difference between the realized and reported number of heads) when the virtual coin is used. Red (CHOICE) and Black (OWN) in (A). Blue-dashed (CHOICE) and gray-dashed (VIRTUAL) in (B) and (C). MW = Mann-Whitney test.

Table 5: Reported number of heads, coin used, and location: Regression results

| | All | | | Wuhan | | | Irvine | | | Osaka | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | (1) | (2) | (3) | (1) | (2) | (3) | (1) | (2) | (3) | (1) | (2) | (3) |
| Wuhan | 1.280*** | 1.297*** | 0.981*** | | | | | | | | | |
| | (0.27) | (0.31) | (0.27) | | | | | | | | | |
| Irvine | 0.013 | 0.009 | 0.132 | | | | | | | | | |
| | (0.27) | (0.30) | (0.26) | | | | | | | | | |
| OWN | -1.751*** | -1.835*** | -1.409*** | -1.563** | -1.984*** | -1.519*** | -1.318** | -1.041 | -0.927 | -2.186*** | -2.243*** | -1.668*** |
| | (0.34) | (0.35) | (0.31) | (0.66) | (0.65) | (0.53) | (0.61) | (0.67) | (0.66) | (0.52) | (0.51) | (0.45) |
| VIRTUAL | -1.918*** | -1.973*** | -1.479*** | -1.763*** | -2.119*** | -1.890*** | -1.318** | -1.069 | -0.841 | -2.512*** | -2.423*** | -1.802*** |
| | (0.34) | (0.35) | (0.31) | (0.66) | (0.65) | (0.52) | (0.61) | (0.66) | (0.65) | (0.53) | (0.52) | (0.46) |
| CHOICE and | -2.541*** | -2.593*** | -1.992*** | -2.832*** | -3.297*** | -2.102*** | -1.660*** | -1.455** | -1.339** | -2.939*** | -2.724*** | -2.230*** |
| virtual coin | (0.33) | (0.33) | (0.30) | (0.63) | (0.62) | (0.52) | (0.58) | (0.62) | (0.61) | (0.50) | (0.50) | (0.44) |
| Female | | -0.144 | 0.023 | | -0.145 | -0.013 | | 0.200 | 0.235 | | -0.646* | -0.267 |
| | | (0.23) | (0.20) | | (0.40) | (0.32) | | (0.42) | (0.41) | | (0.38) | (0.33) |
| Age | | -0.021 | 0.034 | | -0.047 | 0.006 | | -0.015 | 0.016 | | -0.047 | 0.011 |
| | | (0.04) | (0.04) | | (0.10) | (0.08) | | (0.08) | (0.08) | | (0.05) | (0.05) |
| Risk | | -0.007 | 0.034 | | -0.246*** | -0.121* | | 0.103 | 0.107 | | 0.246*** | 0.208*** |
| | | (0.05) | (0.04) | | (0.08) | (0.07) | | (0.10) | (0.09) | | (0.08) | (0.07) |
| Ethics | | -0.094 | -0.009 | | -0.249** | 0.049 | | 0.133 | 0.095 | | -0.027 | -0.003 |
| | | (0.07) | (0.06) | | (0.11) | (0.09) | | (0.14) | (0.14) | | (0.14) | (0.12) |
| Gov. right | | -0.095 | -0.055 | | -0.091 | 0.050 | | -0.531 | -0.406 | | 0.208 | 0.062 |
| | | (0.18) | (0.16) | | (0.30) | (0.24) | | (0.38) | (0.37) | | (0.26) | (0.23) |
| No. truthful | | | -0.188*** | | | -0.238*** | | | -0.092** | | | -0.181*** |
| | | | (0.02) | | | (0.03) | | | (0.04) | | | (0.03) |
| Constant | 8.231*** | 9.735*** | 8.833*** | 9.529*** | 13.867*** | 10.880*** | 7.684*** | 7.178*** | 7.290*** | 8.586*** | 8.423*** | 8.518*** |
| | (0.29) | (1.24) | (1.09) | (0.53) | (2.33) | (1.91) | (0.48) | (2.33) | (2.29) | (0.37) | (1.89) | (1.63) |
| Adjusted $R^2$ | 0.184 | 0.187 | 0.374 | 0.134 | 0.217 | 0.495 | 0.043 | 0.026 | 0.061 | 0.230 | 0.289 | 0.471 |
| $N$ | 360 | 356 | 356 | 120 | 118 | 118 | 120 | 119 | 119 | 120 | 119 | 119 |
| $p$-value[a] | 0.036 | 0.037 | 0.049 | 0.042 | 0.022 | 0.618 | 0.498 | 0.456 | 0.330 | 0.408 | 0.548 | 0.323 |

* $p$ <0.10, ** $p$ <0.05, *** $p$ <0.01

a $p$-value for testing $H_0$: VIRTUAL = CHOICE and virtual coin (Wald test).

Table 6: Misreporting: Regression results

| | All | | | Wuhan | | | Irvine | | | Osaka | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | (1) | (2) | (3) | (1) | (2) | (3) | (1) | (2) | (3) | (1) | (2) | (3) |
| Wuhan | 1.553*** | 1.186*** | 0.833** | | | | | | | | | |
| | (0.38) | (0.41) | (0.34) | | | | | | | | | |
| Irvine | 0.118 | 0.090 | 0.142 | | | | | | | | | |
| | (0.38) | (0.40) | (0.33) | | | | | | | | | |
| VIRTUAL | 0.823*** | 0.870*** | 0.700*** | 2.041*** | 2.281*** | 1.198** | 0.384 | 0.340 | 0.529 | −0.084 | −0.096 | −0.090 |
| | (0.31) | (0.30) | (0.25) | (0.61) | (0.56) | (0.46) | (0.43) | (0.46) | (0.43) | (0.50) | (0.49) | (0.42) |
| Female | | 0.025 | 0.070 | | 0.288 | 0.346 | | −0.277 | −0.234 | | −0.206 | −0.040 |
| | | (0.30) | (0.25) | | (0.55) | (0.42) | | (0.47) | (0.43) | | (0.50) | (0.44) |
| Age | | −0.049 | 0.008 | | −0.132 | −0.144 | | −0.054 | 0.049 | | −0.095 | −0.049 |
| | | (0.06) | (0.05) | | (0.14) | (0.11) | | (0.10) | (0.10) | | (0.09) | (0.08) |
| Risk | | −0.119* | −0.001 | | −0.407*** | −0.178* | | −0.007 | 0.016 | | 0.272** | 0.268*** |
| | | (0.07) | (0.06) | | (0.11) | (0.09) | | (0.11) | (0.10) | | (0.11) | (0.10) |
| Ethics | | −0.280*** | −0.151* | | −0.434*** | −0.062 | | −0.046 | −0.127 | | −0.315 | −0.182 |
| | | (0.09) | (0.08) | | (0.14) | (0.12) | | (0.15) | (0.15) | | (0.19) | (0.17) |
| Gov. right | | −0.052 | 0.143 | | −0.050 | 0.304 | | −0.017 | 0.185 | | 0.259 | 0.304 |
| | | (0.24) | (0.20) | | (0.42) | (0.33) | | (0.40) | (0.37) | | (0.37) | (0.32) |
| No. truthful | | | −0.219*** | | | −0.268*** | | | −0.150*** | | | −0.174*** |
| | | | (0.02) | | | (0.04) | | | (0.04) | | | (0.04) |
| Constant | 0.380 | 4.212** | 3.262** | 1.442*** | 8.536*** | 7.017*** | 0.683** | 2.412 | 1.763 | 0.788** | 3.721 | 3.268 |
| | (0.31) | (1.70) | (1.41) | (0.38) | (3.09) | (2.40) | (0.28) | (2.47) | (2.30) | (0.33) | (2.77) | (2.39) |
| Adjusted $R^2$ | 0.113 | 0.146 | 0.417 | 0.128 | 0.310 | 0.588 | −0.003 | −0.068 | 0.083 | −0.017 | 0.068 | 0.312 |
| $N$ | 203 | 202 | 202 | 72 | 71 | 71 | 71 | 71 | 71 | 60 | 60 | 60 |

* $p$ <0.10, ** $p$ <0.05, *** $p$ <0.01

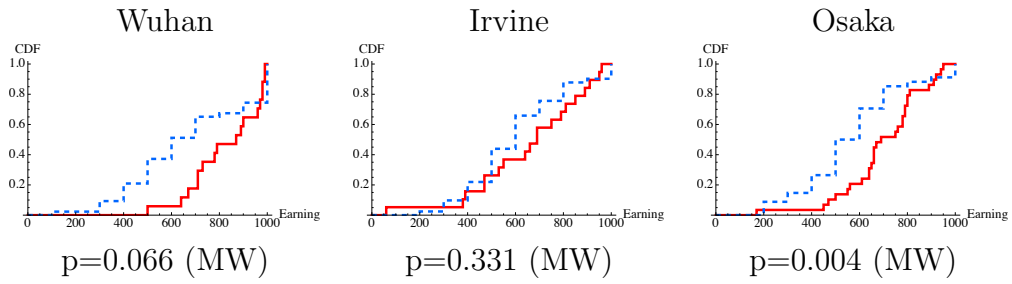
the CHOICE treatment (see columns Wuhan (1), (2), and (3) in Tables 5 and 6). This suggests that while the two sorting forces were equally strong among the Irvine and Osaka subjects, those who did not misreport due to their self-image concern in Wuhan, regardless of the coin used, were disproportionately sorted into using the virtual coin compared to those with low privacy concerns.

## 3.5 Payoffs

We have seen that subjects who used their own coin in the CHOICE treatment reported significantly more heads than those who used the virtual coin in the same treatment. They also reported more heads compared to those in the OWN treatment. What about subjects' payoffs? Did subjects in the CHOICE treatment who used their own coin earn more than those who used the virtual coin, taking into account the price they actually paid to use their own coin?

Figure 4 shows the distribution of the payoffs (net of the price paid to use one's own coin) in the CHOICE treatment, depending on the coin used (own coin in red and virtual coin in blue-dashed), in the three locations. The mean payoff in points, the standard deviations, and the $p$-values from MW tests are also reported. Except for Irvine, those subjects who used their own coin obtained significantly higher payoffs than those who used the virtual coin in the CHOICE treatment. In Wuhan, those who used their own coin earned 827.06 points on average, while those who used the virtual coin earned 669.76 points on average ($p$=0.066, MW). In Osaka, similarly, the average payoffs were 698.28 points for subjects using their own coin and 564.71 points for those using the virtual coin ($p$=0.004, MW). In Irvine,

Own coin vs. virtual coin in the CHOICE treatment




| | Wuhan | | Irvine | | Osaka | |
|---|---|---|---|---|---|---|
| | Own | Virtual | Own | Virtual | Own | Virtual |
| mean | 827.06 | 669.76 | 654.74 | 602.44 | 698.28 | 564.71 |
| (std.dev) | (149.20) | (254.05) | (234.20) | (205.53) | (170.90) | (214.45) |

Figure 4: Distribution of net payoffs depending on the coin used in the CHOICE treatment. Red (own coin) and blue-dashed (virtual coin). MW=Mann-Whitney test.

the average payoffs for those who used their own coin versus the virtual coin were 654.74 and 602.44 points, respectively ($p$=0.331, MW).

In general, participants who chose to use their own coins earned a higher average net payoff than those who used the virtual coin. One could argue that those who purchased the right to use their own coin were "rational" in doing so, at least in terms of material payoff.

Interestingly, the net payoffs of those who used their own coin in the CHOICE treatment are not significantly different from the payoffs earned by those in the OWN treatment, where there was no fee for using the own coin. The average payoffs (std. dev.) in the OWN treatment were 796.67 (158.62) in Wuhan, 636.67 (140.16) in Irvine, and 640.00 (201.03) in Osaka. The $p$-values from an MW test (comparing the net payoff earnings of those who used their own coin in OWN vs. CHOICE treatments) are 0.788, 0.626, and 0.236 in Wuhan, Irvine, and Osaka, respectively. This finding suggests that participants using their own coin may have had a target net

income level that did not vary across the CHOICE and OWN treatments.

# 4 Discussion and conclusion

We have reported on a laboratory experiment that measures participants' willingness to pay to "avoid the spotlight" regarding the reported number of heads and tails in a coin-flipping task. We conducted this experiment on populations in three countries: Osaka (Japan), Wuhan (China) and Irvine, California (United States). What can we learn from such a study?

Most importantly, we find that participants' WTP to avoid scrutiny is large and economically substantial, amounting to more than 40% of the expected gain from misreporting in Osaka and around 30% of this expected gain in Wuhan and Irvine. We suggest several motives for such privacy concerns, including the desire for agency and autonomy, the fear of disclosure of private information, and concerns about harm to one's reputation from dishonest or stigmatized behavior. Our design allows all of these motives to operate simultaneously and it is not really possible to separately estimate the values associated with each of them.

Second, there is heterogeneity both across and within countries. The difference in WTP between Osaka and Wuhan is significant at the 5% level and that between Osaka and Irvine is marginally significant at the 10% level, while the difference between Wuhan and Irvine is not statistically significant. Within each country, WTP ranged from the minimum to the maximum possible value.

To better understand the source of this substantial WTP and individual heterogeneity, we examined a variety of individual characteristics.

Among these variables, we found that participants' self-reported willingness to take risks is significantly and positively related to their WTP to use their own coin. This observation aligns with findings from the corporate governance literature (see, e.g., Hadani et al., 2011; Li, 2008) showing that corporations involved in risky activities often employ expensive accounting obfuscations and earnings management practices in order to conceal those risks. By contrast age, gender, and subjects' views of ethical behavior or of the government's right to monitor people's activities are *not* related to WTP. Interestingly, WTP is higher among those who believe that others are less likely to truthfully report the outcomes of their coin flips, suggesting that social or cultural norms likely play an important role, as noted by Gächter and Schulz (2016) and Serdarevic (2021).

In our main treatment, there is no significant correlation between WTP to use one's own coin and the reported number of heads regardless of the type of coin eventually used. However, participants who actually paid to use their own coin reported a significantly higher number of heads than those who used the virtual coin in Osaka and Wuhan. As a consequence, those who used their own coin by paying a price earned significantly more than those who used the virtual coin for free in these two locations.

Based on our findings, we speculate that the observed differences across the three countries may reflect cultural norms related to payment methods, particularly the use of cash. Unlike Gächter and Schulz (2016), who focus on the prevalence of rule violation, we consider cash usage, because their 2003 rule violation index suggests that WTP should be lowest in China, followed by Japan and then the United States. However, our results are not in line with this expectation.

Table 7: Payment methods usage by country (in %), Source: FIS (2023)

| | Cash | Credit Card | Debit Card | Digital Wallet | Other |
|---|---|---|---|---|---|
| US | 12 | 40 | 31 | 12 | 5 |
| China | 8 | 18 | 15 | 56 | 3 |
| Japan | 51 | 32 | 3 | 10 | 4 |

Indeed, according to FIS (2023), Japan is an outlier in its use of cash relative to digital payments and credit cards, which are more widely used in China and the United States, respectively. As shown in Table 7, the share of cash as the method of payment for point of sale purchases is 51% in Japan, 12% in the United States, and 8% in China. The higher amount of cash usage may be associated with a greater level of privacy-preserving preferences in Japan and thus a significantly higher WTP. The policy implications of these findings are that it might be more difficult to implement CBDCs in Japan than in China, where pilot studies of the new government issued e-CNY digital currency are ongoing (Orcutt, 2023). Alternatively, preferences for transactional privacy might influence the design and adoption of digital payment systems by ensuring that they offer some type of privacy protection.

While some might seek privacy to engage in dishonest or illegal activities, it is important to recognize that there can be other motivations for paying to "avoid the spotlight." People may seek to avoid scrutiny because it is closely linked to their sense of personal autonomy and freedom (Van Aaken et al., 2014). For some, the ability to control who has access to personal information and one's choices is fundamental to individual liberty and self-expression (Oshana, 2016). People may also seek privacy to better manage their social interactions and personal boundaries, contributing to

their own psychological well-being (Roessler and Mokrosinska, 2013).

In future research, it would be of interest to consider other tasks with economic consequences where people face weaker or no material incentives to dishonestly engage in a task in order to investigate whether such diminished motives matter for the WTP for privacy. While we suspect that there would be some reduction in the WTP for privacy in such settings, it could still be the case that individuals have a positive WTP value for privacy in their economic transactions that goes beyond the desire to avoid detection of cheating behavior.

Furthermore, the observed high values placed on privacy in economic transactions suggest a need for finding the right balance between fraud prevention and ensuring privacy in our digital economies. Effective fraud prevention, when balanced with privacy concerns, can enhance the functioning of the digital economy (Romanosky, 2016). Getting the right balance, however, can be a complex task because there are not only fraud prevention and privacy trade-offs but also trade-offs between different aspects of privacy itself, as noted by Pozen (2016). Future studies might explore these varied trade-offs with the aim of discovering an optimal balance.

# Acknowledgments

The experimental protocol governing data collection was approved by the IRB of the Institute of Social and Economic Research (ISER), Osaka University (Nos. 20230201 and 20230803). The experiment is pre-registered at AsPredicted.org (#147410 for the CHOICE treatment (`https://aspredicted.org/sbmw-zwqt.pdf`) and #144318 for the control treatments (`https:`

//aspredicted.org/cbvx-r8rf.pdf)). Funding was provided by (a) the Joint Usage/Research Center, ISER, Osaka University, (b) Grants-in-aid for Scientific Research Nos. 18K19954, 20H05631, and 23H00055 from the Japan Society for the Promotion of Science, Tier 1 Grant from MOE of Singapore (RG121/23), the RIE2025 Industry Alignment Fund – Industry Collaboration Projects (IAF-ICP) (Award I2301E0026), administered by A*STAR, the Alibaba Group and NTU Singapore through Alibaba-NTU Global e-Sustainability CorpLab (ANGEL), and (c) School of Social Science, UC Irvine. We benefited from helpful comments by Shu-Heng Chen, Tony He, Juergen Huber, Lin Jing, Michael Kirchler, Marie Claire Villeval, and participants in the 2024 ESA Asia Pacific Regional Conference, the 2024 iSee workshop at NYU-Abu Dhabi, the 2024 Society for Experimental Finance Conference in Stavanger, the 2025 Innsbruck Summit on (Unethical) Behavior, WEHIA 2025 at XJTLU, Suzhou and seminars at Erasmus, Rotterdam, and Fudan Universities.

# References


Abeler, J., D. Nosenzo, and C. Raymond (2019): "Preferences for Truth-Telling," *Econometrica*, 87, 1115–1153.

Acquisti, A., L. Brandimarte, and G. Loewenstein (2015): "Privacy and human behavior in the age of information," *Science*, 347, 509–514.

Acquisti, A., L. K. John, and G. Loewenstein (2013): "What is privacy worth?" *Journal of Legal Studies*, 42, 249–274.

Acquisti, A., C. Taylor, and L. Wagman (2016): "The economics of privacy," *Journal of economic Literature*, 54, 442–492.

Ahnert, T., P. Hoffmann, and C. Monnet (2022): "The digital economy, privacy, and CBDC," Working paper, ECB.

Becker, G. M., M. H. DeGroot, and J. Marschak (1964): "Measuring utility by a single-response sequential method," *Behavioral Science*, 9, 226–232.

Benndorf, V. and H.-T. Normann (2018): "The willingness to sell personal data," *The Scandinavian Journal of Economics*, 120, 1260–1278.

Beresford, A. R., D. Kübler, and S. Preibusch (2012): "Unwillingness to pay for privacy: A field experiment," *Economics Letters*, 117, 25–27.

Cason, T. N. and C. R. Plott (2014): "Misconceptions and game form

recognition: Challenges to theories of revealed preference and framing," *Journal of Political Economy*, 122, 1235–1270.

Chen, D. L., M. Schonger, and C. Wicken (2016): "oTree – An open-source platform for laboratory, online and field experiments," *Journal of Behavioral and Experimental Finance*, 9, 88–97.

Cialdini, R. B. and N. J. Goldstein (2004): "Social influence: Compliance and conformity," *Annual Review of Psychology*, 55, 591–621.

Cohn, A., E. Fehr, and M. A. Maréchal (2014): "Business culture and dishonesty in the banking industry," *Nature*, 516, 86–89.

Erkal, N., L. Gangadharan, and N. Nikiforakis (2011): "Relative earnings and giving in a real-effort experiment," *American Economic Review*, 101, 3330–3348.

Falk, A., A. Becker, T. Dohmen, B. Enke, D. Huffman, and U. Sunde (2018): "Global evidence on economic preferences," *Quarterly Journal of Economics*, 133, 1645–1692.

FIS (2023): "The Global Payments Report," Technical report.

Fischbacher, U. and F. Föllmi-Heusi (2013): "Lies in disguise – An experimental study on cheating," *Journal of European Economic Association*, 11, 525–547.

Fries, T., U. Gneezy, A. Kajackaite, and D. Parra (2021): "Observability and lying," *Journal of Economic Behavior and Organization*, 189, 132–149.

Gächter, S. and J. F. Schulz (2016): "Intrinsic honesty and the prevalence of rule violations across societies," *Nature*, 531, 496–499.

García-Gallego, A., N. Georgantzis, T. Jaber-López, and G. Michailidou (2020): "Audience effects and other-regarding preferences against corruption: Experimental evidence," *Journal of Economic Behavior & Organization*, 180, 159–173.

Gneezy, U., A. Kajackaite, and J. Sobel (2018): "Lying aversion and the size of the lie," *American Economic Review*, 108, 419–453.

Grossman, Z. (2015): "Self-signaling and social-signaling in giving," *Journal of Economic Behavior & Organization*, 117, 26–39.

Grossman, Z. and J. J. van der Weele (2017): "Self-image and willful ignorance in social decisions," *Journal of the European Economic Association*, 15, 173–217.

Hadani, M., M. Goranova, and R. Khan (2011): "Institutional investors, shareholder activism, and earnings management," *Journal of Business Research*, 64, 1352–1360.

Haerpfer, C., R. Inglehart, A. Moreno, C. Welzel, K. Kizilova, J. Diez-Medrano, M. Lagos, P. Norris, E. Ponarin, and B. Puranen, eds. (2022): *World Values Survey: Round Seven - Country-Pooled Datafile Version 5.0.*, Madrid, Spain & Vienna, Austria: JD Systems Institute & WVSA Secretariat.

Herskind, L., P. Katsikouli, and N. Dragoni (2020): "Privacy and cryptocurrencies—A systematic literature review," *IEEE Access*, 8, 54044–54059.

Jentzsch, N., S. Preibusch, and A. Harasser (2012): "Study on monetizing privacy: An economic model for pricing personal information," Technical report, European Network and Information Security Agency.

Langer, E. J. (1975): "The illusion of control." *Journal of Personality and Social Psychology*, 32, 311–328.

Lazear, E. P., U. Malmendier, and R. A. Weber (2012): "Sorting in experiments with application to social preferences," *American Economic Journal: Applied Economics*, 4, 136–163.

Li, F. (2008): "Annual report readability, current earnings, and earnings persistence," *Journal of Accounting and Economics*, 45, 221–247.

Orcutt, M. (2023): "What's next for China's digital currency?" *MIT Technology Review*, august 3.

Oshana, M. (2016): *Personal autonomy in society*, London, Routledge.

Plott, C. R. and K. Zeiler (2005): "The Willingness to Pay-Willingness to Accept Gap, the "Endowment Effect," Subject Misconceptions, and Experimental Proceedures for Eliciting Valuations," *American Economic Review*, 95, 530–545.

Pozen, D. E. (2016): "Privacy-privacy tradeoffs," *The University of Chicago Law Review*, 83, 221–247.

Preibusch, S., D. Kübler, and A. R. Beresford (2013): "Price versus privacy: An experiment into the competitive advantage of collecting less personal information," *Electronic Commerce Research*, 13, 432–455.

Prince, J. T. and S. Wallsten (2022): "How much is privacy worth around the world and across platforms?" *Journal of Economics & Management Strategy*, 31, 785–1019.

Roessler, B. and D. Mokrosinska (2013): "Privacy and social interaction," *Philosophy & Social Criticism*, 39, 771–791.

Romanosky, S. (2016): "Examining the costs and causes of cyber incidents," *Journal of Cybersecurity*, 2, 121–135.

Savage, S. J. and D. M. Waldman (2015): "Privacy tradoffs in smartphone applications," *Economics Letters*, 137, 171–175.

Serdarevic, N. (2021): "Licence to lie and the social (In)appropriateness of lying," *Economics Letters*, 199, 109716.

Skatova, A., R. McDonald, S. Ma, and C. Maple (2023): "Unpacking privacy: Willingness to pay to protect personal data," *PLoS One*, 18, 0284581.

Stüber, R. (2020): "The benefit of the doubt: Willful ignorance and altruistic punishment," *Experimental Economics*, 23, 848–872.

Tsai, J., S. Egelman, L. Cranor, and A. Acquisti (2011): "The effect of online privacy information on purchasing behavior: An experimental study," *Information Systems Research*, 22, 254–268.

Van Aaken, D., A. Ostermaier, and A. Picot (2014): "Privacy and Freedom: An Economic (Re-) Evaluation of Privacy," *Kyklos*, 67, 133–155.

Wang, Z. (2023): "Money Laundering and the Privacy Design of Central Bank Digital Currency," *Review of Economic Dynamics*, 51, 604–632.

# A Questionnaire

After reporting on the number of heads and tails from the 10 trials, participants had to complete a questionnaire in which, in addition to providing information on their age and gender, they were asked the following questions:

(1) How many, out of 20 randomly chosen participants in the experiment, have reported the outcome of coin flips truthfully?

(2) How many have reported a $WTP > 0$? (Only in the main treatment)

(3) In general, how willing are you to take risks? Please indicate on the scale below from 0 to 10, where 0 means you are "completely unwilling to take risks" and a 10 means you are "very willing to take risks."

(4) What do you think is the purpose of the experiment?

(5) Please indicate whether you think the following actions can be always justified, never be justified or something in between using the given scale. (1: Never justifiable ... 10: Always justifiable).

   (a) Claiming government benefits to which you are not entitled.

   (b) Cheating on taxes if you have a chance.

   (c) Telling the truth when it is costly for you to do so.

(6) Do you think your country's government should or should not have the right to do the following (1: Definitely should have right. 2: Probably should have right. 3: Probably should not have right. 4: Definitely should not have right.):

(a) Keep people under video surveillance in public areas.

(b) Monitor all e-mails and any other information exchanged on the internet.

(c) Access to people's bank account balances and their history of payments.

We will later use the answers to these questions as potential covariates in our regression analysis.

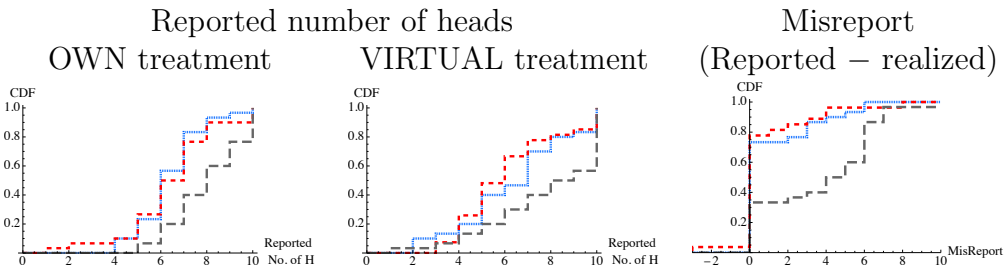
Question (3) is from the Global Preference Survey (Falk et al., 2018). Question (5) is related to ethics, and question (6) is related to the government's rights. Questions (5-a), (5-b), (6-a), and (6-b) are from the World Value Survey Wave 7 (Haerpfer et al., 2022).

From question (5) we construct a variable called "Ethics." Namely, Ethics = ((11 - claiming benefit) + (11 - cheating tax) + telling truth)/3. A Higher value of the Ethics variable indicates a participant considers unethical behavior to be less justifiable.

From question (6) we construct a variable called "Government's right." Namely, Government's right = ((5-video surveillance) + (5-internet) + (5-bank account))/3. A higher value of the Government's right variable indicates a participant agrees to a larger extent that the government has the right to monitor people.

# B Results of the control treatments

Figure B.1 shows the distribution of the reported number of heads in the OWN treatment (left) and the VIRTUAL treatment (center), as well as the extent of misreporting (the reported number of heads − the realized




p=0.005 (KW)
p-values (MW)

| | Irvine | Wuhan |
|---|---|---|
| Osaka | 0.7334 | 0.0017 |
| Irvine | | 0.0002 |

p=0.0151 (KW)
p-values (MW)

| | Irvine | Wuhan |
|---|---|---|
| Osaka | 0.4774 | 0.0069 |
| Irvine | | 0.0264 |

p=0.0001 (KW)
p-values (MW)

| | Irvine | Wuhan |
|---|---|---|
| Osaka | 0.5061 | 0.0002 |
| Irvine | | 0.0005 |

Figure B.1: Cumulative distribution of the reported number of heads in OWN treatment (left) and VIRTUAL treatment (center), as well as the extent of misreporting in VIRTUAL treatment (right) in Osaka (red), Irvine (cyan), and Wuhan (gray). MW = Mann-Whitney test; KW = Kruskal-Wallis test.

number of heads) in the VIRTUAL treatment (right) in Osaka (red), Irvine (cyan), and Wuhan (gray).[11] The $p$-values from KW tests and MW tests for all pair-wise comparisons are also reported. The left and center panels reveal that for both treatments, there are significant differences between Wuhan and the other two locations in terms of the reported numbers of heads, which are not significantly different between Osaka and Irvine in either treatment. Similarly, the extent of misreporting shown in the right panel is significantly greater in Wuhan than in Irvine and Osaka.

Table B.1 shows the outcome of OLS regressions in which the dependent variables are the reported number of heads (No. Head) or the extent of misreporting (Misreport). In specification 2, we control for individual characteristics. In specification 3, we also control for bride about others' reporting behavior. Those who believe others are reporting truthfully (No.

[11]In the Wuhan session, the realized outcomes of the virtual coin flips were not fully recorded for one participant. Thus, there are only 29 observations instead of 30 for Wuhan.

Table B.1: Reported number of heads (No. Head) and misreporting: Results of ordinary least square regressions.

| Dep. Var. | No. Head | | | | | | Misreport | | |
|---|---|---|---|---|---|---|---|---|---|
| Treatment | Own (1) | Own (2) | Own (3) | Virtual (1) | Virtual (2) | Virtual (3) | Virtual (1) | Virtual (2) | Virtual (3) |
| Wuhan | 1.567*** | 1.632*** | 0.992** | 1.693*** | 1.516** | 1.014* | 2.779*** | 2.298*** | 1.573*** |
| | (0.44) | (0.51) | (0.48) | (0.64) | (0.68) | (0.61) | (0.61) | (0.63) | (0.50) |
| Irvine | −0.033 | −0.197 | −0.113 | 0.293 | 0.403 | 0.775 | 0.363 | −0.037 | 0.481 |
| | (0.44) | (0.51) | (0.45) | (0.64) | (0.72) | (0.62) | (0.61) | (0.66) | (0.51) |
| female | | −0.173 | 0.095 | | −0.497 | −0.741 | | −0.108 | −0.404 |
| | | (0.39) | (0.35) | | (0.54) | (0.46) | | (0.50) | (0.38) |
| Age | | −0.040 | 0.008 | | −0.039 | 0.069 | | −0.136 | −0.001 |
| | | (0.07) | (0.07) | | (0.10) | (0.09) | | (0.09) | (0.07) |
| Risk | | 0.144* | 0.143** | | −0.149 | −0.019 | | −0.085 | 0.055 |
| | | (0.08) | (0.07) | | (0.11) | (0.10) | | (0.11) | (0.08) |
| Ethics | | −0.067 | −0.012 | | −0.158 | −0.045 | | −0.347** | −0.241** |
| | | (0.12) | (0.11) | | (0.16) | (0.14) | | (0.15) | (0.12) |
| Gov. right | | | 0.329 | | | −0.173 | | | 0.083 |
| | | | (0.29) | | | (0.34) | | | (0.28) |
| No. truthful | | | −0.152*** | | | −0.223*** | | | −0.251*** |
| | | | (0.03) | | | (0.04) | | | (0.03) |
| Constant | 6.400*** | 7.146*** | 6.274*** | 6.074*** | 9.004*** | 7.807*** | 0.704 | 6.906*** | 4.854** |
| | (0.31) | (1.95) | (1.79) | (0.46) | (2.57) | (2.32) | (0.44) | (2.37) | (1.92) |
| Adjusted $R^2$ | 0.150 | 0.170 | 0.351 | 0.067 | 0.065 | 0.332 | 0.212 | 0.257 | 0.573 |
| $N$ | 90 | 89 | 89 | 87 | 87 | 87 | 86 | 86 | 86 |
| $p$-value[a] | 0.0004 | 0.0002 | 0.0161 | 0.0274 | 0.0983 | 0.7116 | 0.0001 | 0.0003 | 0.0458 |

* $p$ <0.10, ** $p$ <0.05, *** $p$ <0.01

a: $p$-value for testing $H_0$: Wuhan = Irvine (Wald test)

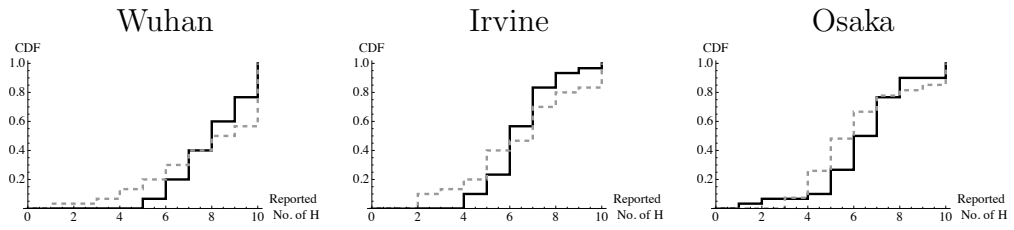



Figure B.2: Cumulative distribution of the reported number of heads in OWN treatment (black) and VIRTUAL treatment (gray) treatments. Wuhan (left), Irvine (cyan), and Osaka (right). MW = Mann-Whitney test; KS = Kolmogrov-Smirnov test.

truthful) tend to report a lower number of heads and also misreport less. The dummy variable Wuhan is significant at the 5% level in all specifications except for Virtual (3) where it is marginally so at 10% level. We also observe a negative and significant correlation between the Ethics variable and the Misreporting amount. Thus, those who consider claiming public benefits that they are not entitled to, cheating on their taxes, or not telling the truth when it is costly to do so are less justifiable are less likely to misreport.

Figure B.2 compares the distributions of the reported number of heads between the OWN treatment (black) and the VIRTUAL treatment (gray) in each location. The $p$-values from MW and Kolmogrov-Smirnov (KS) tests are also reported. These non-parametric tests indicate that neither the distribution nor the median reported number of heads is significantly different between the two treatments in any of the locations. The reporting of 10 heads, however, is marginally significantly more frequent in the VIRTUAL treatment than in the OWN treatment in Wuhan and Irvine, once individual characteristics are controlled for, but not in Osaka (see, the

results of OLS regressions of columns (2) and (3) for each location reported in Table B.2). This is consistent with existing studies (see Abeler et al., 2019) suggesting that subjects are less likely to misreport when they are concerned about their social image, but if they do misreport, they do so to the maximum extent to overcome the cost associated with such concerns.

Table B.2: Reporting 10 heads: Results of ordinary least square regressions

| | Wuhan (1) | Wuhan (2) | Wuhan (3) | Irvine (1) | Irvine (2) | Irvine (3) | Osaka (1) | Osaka (2) | Osaka (3) |
|---|---|---|---|---|---|---|---|---|---|
| Virtual coin | 0.200 | 0.239* | 0.204* | 0.133* | 0.163** | 0.147* | 0.048 | 0.080 | 0.091 |
| | (0.12) | (0.12) | (0.11) | (0.08) | (0.08) | (0.08) | (0.09) | (0.08) | (0.07) |
| Female | | −0.000 | 0.008 | | 0.070 | 0.025 | | −0.160* | −0.111 |
| | | (0.12) | (0.11) | | (0.09) | (0.09) | | (0.09) | (0.08) |
| Age | | −0.045 | −0.022 | | −0.009 | −0.002 | | −0.010 | −0.000 |
| | | (0.03) | (0.03) | | (0.02) | (0.02) | | (0.01) | (0.01) |
| Risk | | −0.054** | −0.025 | | 0.036* | 0.035* | | 0.043** | 0.042** |
| | | (0.03) | (0.02) | | (0.02) | (0.02) | | (0.02) | (0.02) |
| Ethics | | −0.053 | −0.017 | | −0.003 | 0.002 | | −0.003 | −0.000 |
| | | (0.03) | (0.03) | | (0.03) | (0.03) | | (0.03) | (0.03) |
| Gov. right | | | 0.027 | | | −0.093 | | | 0.062 |
| | | | (0.08) | | | (0.08) | | | (0.06) |
| No. truthful | | | −0.042*** | | | −0.014 | | | −0.022*** |
| | | | (0.01) | | | (0.01) | | | (0.01) |
| Constant | 0.233*** | 1.731** | 1.090 | 0.033 | −0.026 | 0.184 | 0.100 | 0.182 | −0.003 |
| | (0.09) | (0.67) | (0.67) | (0.05) | (0.39) | (0.40) | (0.06) | (0.40) | (0.37) |
| Adjusted $R^2$ | 0.029 | 0.132 | 0.319 | 0.033 | 0.030 | 0.074 | −0.013 | 0.087 | 0.289 |
| $N$ | 60 | 60 | 60 | 60 | 60 | 60 | 57 | 56 | 56 |

* $p$ <0.10, ** $p$ <0.05, *** $p$ <0.01

Dependent variable is one if the subject reported 10 heads and zero otherwise.

# Instruction

Note for the readers: for "CHOICE" treatment

# Welcome

- Welcome to the study. You are guaranteed $7 for showing up and completing this study.
- These instructions explain how you can earn *additional* earnings beyond the guaranteed $7 show-up payment from the decisions that you make.
- Additional earnings will be expressed in points. At the end of the experiment, any points you earned will be converted into US Dollar at the rate of 100 points = $ 1.00.
- Please silence any mobile devices and refrain from any distractions for the duration of this study. If you have any questions, please contact the experimenter.
- Today's study starts with the main decision task followed by a questionnaire. Your earning during the experiment will be paid in private.

# The main task

- The main task consists of flipping a two-sided coin 10 times. For each of the 10 flips, you record whether the coin landed heads or tails.
- After the completion of 10 flips, **you will receive 100 points for each head that you report and 0 points for each tail you report.**
- Note that your payment is based only on **the number of heads and tails** (out of 10 flips) that your report.


# The main task

- In completing this task, you have the option to use either
  - 1) a virtual online coin that we provide to you or
  - 2) to use your own coin.
- If you use your own coin, then it is not possible for us to check how many times your own coin actually landed heads.
- However, if you use our virtual coin, then we will be able to know the realization of the coin flips.
- **Still, regardless of whether you use your own coin or our virtual coin, we will rely on your *own report* of the number of heads and tails to determine your total points.**

# The main task

- To use the virtual online coin costs you nothing.
- However, to use your own coin you have to first indicate your willingness to pay (WTP) in points for this option and in doing so, earn the right to use your own coin as explained in the next slide.

# Willingness To Pay

- Specifically, we ask how much you are willing to pay (in points) to use your own coin.
- The range of values you can state is
  [0, 10, 20,..., 100, ... 200, ..., 300,... 400 ,..., 500],
  that is, the range is from 0 to 500 points in increments of 10 points.
- After you state your WTP, the computer program will draw a random price between 10 and 500 points, inclusive in increments of 10 points. Note that this is the same range for your stated WTP, except that 0 points is not included. All prices between 10 and 500 points, in increments of 10 points, are equally likely to be chosen.

# Which coin to use?

- If your WTP is greater than or equal to the randomly drawn price, then you earn the right to use your own coin, but you have to pay the randomly drawn price in points.
- However, if the random price is greater than your stated WTP, then you do not earn the right to use your own coin and must use our virtual coin instead.
- Thus, the higher is your WTP, the greater is the chance that you will earn the right to use your own coin.
- At the extremes,
  - if your WTP is 0, then you will never earn the right to use your own coin,
  - if your WTP is 500, then you will always earn the right to use your own coin, but will have to pay the randomly drawn price out of your earnings.
- Of course, you are free to choose any WTP in between these two extremes.

# two examples

- **Example 1**:
  - Imagine you have chosen your WTP to be 200 points. Then, the computer randomly draws a price of 100 points
  - In this case, you will use your own coin, but 100 points will be subtracted from your point earnings as the price for using your own coin.
- **Example 2**:
  - Imagine you have chosen your WTP to be 200 points. Then, the computer randomly draws a price of 300 points.
  - In this case, you must use our virtual coin, but no points will be subtracted from your point earnings.

# How to determine your WTP?

- In deciding your WTP, please first ask yourself the following question:
  - At a price of 0 points, would you like to use your own coin instead of our virtual coin?
- If your answer is no, then your WTP is 0 points.
- If your answer is yes, then, go to the next question:
  - At the price of 10 points, would you like to use your own coin instead of our virtual coin?
- If your answer is no, then your WTP is 10 points.
- If your answer is yes, then, go to the next question:
  - At the price of 20 points, would you like to use your own coin instead of our virtual coin?
- **Continue this process until you find the price at which your answer switches from yes to no. This should be your WTP.**

# Quiz

To check whether you understood these instructions correctly, please answer the following questions.

Please click “Next” button on the screen.

# Instruction

Note for the reader: for "OWN" treatment

# Welcome

- Welcome to the study. You are guaranteed $7 for showing up and completing this study.
- These instructions explain how you can earn *additional* earnings beyond the guaranteed $7 show-up payment from the decisions that you make.
- Additional earnings will be expressed in points. At the end of the experiment, any points you earned will be converted into US Dollar at the rate of 100 points = $ 1.00.
- Please silence any mobile devices and refrain from any distractions for the duration of this study. If you have any questions, please contact the experimenter.
- Today's study starts with the main decision task followed by a questionnaire. Your earning during the experiment will be paid in private.

# The main task

- The main task consists of flipping a two-sided coin 10 times. For each of the 10 flips, you record whether the coin landed heads or tails.
- After the completion of 10 flips, **you will be paid 100 points for each head that you report and 0 point for each tail you report.**
- Note that your payment is based only on t**he number of heads and tails** (out of 10 flips) that your report.

**heads**

**tails**


https://www.usmint.gov/news/image-library/circulating

# The main task

- In completing this task, you will use your own coin.
- Because you use your own coin, it is not possible for us to check how many times your own coin actually landed heads.
- **Still, we will rely on your *own report* of the number of times the coin flip resulted in heads to determine your total points**.

# Quiz

To check whether you understood these instructions correctly, please answer the following questions.

Please click “Next” button on the screen.

# Instruction

Not for the reader: for "VIRTUAL" treatment

# Welcome

- Welcome to the study. You are guaranteed $7 for showing up and completing this study.
- These instructions explain how you can earn *additional* earnings beyond the guaranteed $7 show-up payment from the decisions that you make.
- Additional earnings will be expressed in points. At the end of the experiment, any points you earned will be converted into US Dollar at the rate of 100 points = $ 1.00.
- Please silence any mobile devices and refrain from any distractions for the duration of this study. If you have any questions, please contact the experimenter.
- Today's study starts with the main decision task followed by a questionnaire. Your earning during the experiment will be paid in private.

# The main task

- The main task consists of flipping a two-sided coin 10 times. For each of the 10 flips, you record whether the coin landed heads or tails.
- After the completion of 10 flips, **you will be paid 100 points for each head that you report and 0 point for each tail you report.**
- Note that your payment is based only on **the number of heads and tails** (out of 10 flips) that your report.


# The main task

- In completing this task, you will use
  - a virtual online coin that we provide to you
- Because you use our virtual coin, we will be able to know the realization of the coin flips.
- **Still, we will rely on your *own report* of the number of times the coin flip resulted in heads to determine your total points.**

# Quiz

To check whether you understood these instructions correctly, please answer the following questions.

Please click “Next” button on the screen.