Cash or Red Envelope: A Field Experiment on Work Incentives in China

Cangjian Cao[a], Sherry Xin Li[b], Tracy Xiao Liu[a]

[a]*Department of Economics, School of Economics and Management, Tsinghua University, Beijing, China*
[b]*School of Economic, Political and Policy Sciences, University of Texas at Dallas, USA*

Abstract

The nature of gifts matters at the workplace and affects worker's reciprocity and productivity. We design a field experiment to investigate how different presentations of a monetary gift influences worker's reciprocity in response to unappealing payment scheme. Undergraduate students in China are hired for a temporary research assistant job to enter survey answers to the computer. At the end of the job, student workers are given a surprising monetary gift of two different amounts in cold, hard cash or a slightly more thoughtful form with cash enclosed in a red envelope, and they decide whether to stay to help out with more survey entries with less appealing piece rate pay relative to in the original task. We find that how to present the monetary gift counts but only for the larger amount. For the larger gift, red envelope dominates cold, hard cash in all the aspects including workers' average performance, willingness to help under a less appealing pay scheme, and willingness to give up more earnings by trading off higher quality of work for quantity. The difference in the impact occurs since workers are more likely to perceive the more thoughtful presentation of the large gift as the employer's appreciation and are less likely to perceive the gift as additional income.

Keywords: lab in the field, reciprocity, red envelope
JEL Classification: C91, D9, J3

1. Introduction

How to motivate employees to provide more efforts is a central challenge for both theorists and practitioners. In particular, starting from Akerlof's seminal work (Akerlof, 1982), a large volume of literature has documented the importance of gift exchange, i.e., workers reciprocate positively to "gifts" and return favors by exerting

higher effort (see Fehr et al., 1993; Hannan et al., 2002a; Charness, 2004; Gneezy and List, 2006; Hossain and Li, 2013). In reality, tremendous amount of time, effort, and energies have been spent on gifting and the presentations of the gifts, e.g., gift cards, chocolates, and flowers. For example, 45% U.S. workers reported that they give their gift to colleagues during the holiday season, and 56% of them spend more than $20 for gifts[1].

When it comes to the choice of gifts, both the size and the nature of the gifts matter. The current literature in economics mainly focus on the first issue, and report that small incentive may crowd out economic agents' intrinsic motivations in certain activities, such as blood donation (Titmuss et al., 1970), charity fundraising (Gneezy and Rustichini, 2000). A recent field experiment by Hossain and Li (2013) points out that whether the crowding out effect incur or not depends on the context, e.g., significant crowding out effect only occurs when the task is under pro-social frame, but not under a regular work setting.

Compared to the monetary size of the gifts, the nature of gifts is lack of study and economic theory mostly assumes that gifts with equal monetary value are equivalent. However, in practice, people perceive monetary and non-monetary gifts differently and non-monetary gift, which signals more time and effort from the principal, is usually more effective to motivate higher productivity for workers (Kube et al., 2012). Therefore, when a cash gift signaling more time and effort, such as the origami, an artistically folded and wrapped cash gift used in Kube et al. (2012), is as effective as non-monetary gift regarding increasing worker's productivity.

In this study, we investigate how the different presentations of monetary gift influence reciprocity by workers. In reality, gift cards (also called gift certificates in North America, or gift vouchers in the U.K.) are often used as alternative to cash gift among friends or coworkers. They are prepaid money cards usually issued by a retailer or a financial institute for purchases at a store or business. In some East Asian cultures, monetary gifts take the form of cash bills wrapped in an opaque red envelope with some words of blessings or appreciations printed on the cover. The red color of the envelope symbolizes good luck and is also believed to ward off evil spirits. These red envelopes, also known as red packets, are given among family members or friends during holiday seasons (e.g., Lunar New Year) or at family and social gatherings to celebrate important events (e.g., wedding, baby birth, graduation, birthday). They are also given to employees by supervisors or business owners as a token of appreciation or wish for good fortune[2] . Moreover, in Japan, people

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[1]https://www.cbsnews.com/news/holiday-gift-giving-in-the-workplace-an-insiders-guide/
[2]The emergence of WeChat, the worldwide largest social media mobile APP equipped with

use a special kind of envelope called "Goshugi-bukuro and Koden-bukuro" to wrap cash gift, and the manners of wrapping monetary gift varies in different occasions[3]. In Korean, cash gift is popular for weddings (called "congratulatory money"), birthdays, funerals, etc. However, cash gift should be put in a white envelope, otherwise it is thought to be rude. In Italian wedding, the bride may carry a special bag called "la borsa" at her reception. And as part of a custom guests place envelopes called "buste" with money into the satin bag. In Nigerian wedding, guests also fill a bag with envelopes containing checks. On wedding morning in Malaysia, children carry trays of food and money wrapped by animal or flower-shaped envelopes to the bride[4]. As the alternative to cash, all these different presentations of monetary gifts share one characteristic in common. That is, they add the warmth and fuzziness to the cold, hard cash since the gift givers spend time and effort and put more thoughts into the gifts than just offering cash. Although the economic theory predicts that these different forms of gifts should be equivalent to cash of the same value in their impact on workers' effort at workplace, it is puzzling why despite the time and effort spent by the gift givers, these alternative forms of monetary gifts are often preferred to cash gifting in real life.

In this study, we conduct a natural field experiment to investigate whether and how a more thoughtful form of monetary gift influences workers' reciprocity. In the experiment conducted in China we use cash wrapped in a red envelope as an alternative form of gift and compare and contrast its impact on workers' effort to that of cash. Specifically, undergraduate students are hired as part-time workers to enter survey answers to the computer for a lump-sum payment. They are given a surprising monetary gift at the end of the task. The nature and the amount of the monetary reward vary across treatments. The amount of reward is either low (5 RMB) or high (20 RMB) offered as cash or as cash wrapped in a red envelope. The student workers decide whether to stay to help with more survey entries with a less appealing piece-rate payment.

We find that compared to the control treatment with no gift, workers who receive a monetary gift are more likely to participate in the additional task except when they are offered with the large amount of cash. How to present the monetary gift matters,

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online payment service, brings the use of red packets to a new era and WeChat users can send the virtual red packets to one particular friend or a group people in a Wechat group (Qiu et al., 2016; Yuan et al., 2017). In particular, even a small red packet containing several cents can significantly improve communication volumes in WeChat groups (Yuan et al., 2017).

[3]http://dicethekamikaze.com/blog/jp-culture/a-manner-of-japanese-money-gift/

[4]https://www.theknot.com/content/giving-money

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but the effect depends on the amount. For the smaller amount of gift, cash and cash enclosed in a red envelope have similar impact on worker's willingness to reciprocate and their work quantity and quality. For the larger amount of gift, however, red envelope dominates cash across the board including workers' average performance, willingness to help under a less appealing pay scheme, willingness to deliver higher quality of work in trade-off with a higher quantity and more earnings. This different impact of the presentations of the large gift is primarily driven by worker's perceptions. Since the large cash gift in a red envelope is more likely to be perceived as the employer's appreciation and less likely to be perceived as additional income, it counteracts the crowding-out effect of large monetary incentives on worker's effort.

Our study contributes to the literature on gift exchange by showing that even a weak manipulation of the presentation of monetary gift could make a difference in motivating workers under a relatively unappealing payment environment. Cash in the red envelope in our study represents a slightly more thoughtful presentation of the monetary gift than the cold, hard cash, since a generic red envelope signals the minimum amount of time and effort invested by the employer in the gift. Nevertheless, it affects positively the workers' reciprocity in the overall performance and their choice of quality over quantity despite the unattractive pay scheme. Therefore, compared to the earlier studies in the literature, our study shows that a weakly better presentation of the monetary gift, compared to cold, hard cash, could generate more reciprocity from the workers, and its positive impact could survive the less appealing payment environments. Our findings, therefore, justify the tremendous amount of time and effort invested in daily gift-giving practices.

The rest of the paper is organized as follows. The related literature is reviewed in Section 2. Section 3 presents the experimental design. Section 4 discusses the empirical analyses and results. Section 5 concludes.

2. Literature Review

In this section, we review related field experiments on gift exchange. For the laboratory experiment, please refer to Charness and Kuhn's survey paper.

A large literature has documented the effectiveness of gift, though the magnitude of the effect varies with gift nature, e.g., monetary (Ockenfels et al., 2014) vs. non-monetary gift (Kube et al., 2012; Maréchal and Thöni, 2016); gift size (Falk, 2007); and the workers' type, e.g., students (Gneezy and List (2006), Hennig-Schmidt et al. (2010), Kube et al. (2013), Al-Ubaydli et al. (2015),Esteves-Sorenson and Macera (2013)) vs. non-student populations (Bellemare and Shearer (2009), Hannan et al. (2002b)). Englmaier and Leider (2012) and Kessler (2013) explore factors that predict when reciprocity in labor markets is likely to occur. For example, the signal of

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the gift is better unambiguous. If it is perceived as more kind, more generous, people would reciprocate more. Besides, psychological motivators in gift exchange such as "warm glow" giving (Imas, 2014) or social preference (Dellavigna et al., 2016), compliments (Kirchler and Palan, 2018), social recognition (Kosfeld and Neckermann, 2011), reputation concern (List, 2006) may also lead to better performance of employees. Moreover, fairness is a very important factor for reciprocity behavior (see Cox et al., 2007; Bolton and Ockenfels, 2000; Fehr and Schmidt, 1999; Koszegi and Rabin, 2006). Dellavigna and Pope (2017) conduct a large-scale real-effort experiment and examine the effectiveness of different monetary and non-monetary motivators.

Whether gift matters crucially depends on how workers evaluate the wage compared to a reference point, which is usually the initial wage or market wage. For example, Cohn et al. (2014) find that employees reciprocate to wage increase only when they perceive being underpaid at their base wage, and the effect is only significant for those reciprocal types, which are measured by a follow-up two-person game. Using survey data from a large multinational company, Ockenfels et al. (2014) find that bonuses that fall behind natural reference points lead to lower job satisfaction and performance. They also use a laboratory experiment for robustness check. A field experiment by Kube et al. (2013) suggests that cutting wage significantly decrease students' work quantity due to negative reciprocity, while the same amount of wage increase does not symmetrically increase effort. Bartling and Schmidt (2014) shows that an initial contract may serve as reference point that shape the expectations of the contracting parties and affect the renegotiation .

Furthermore, a study by Gilchrist et al. (2016) show the surprising gift component instead of the additional monetary incentive, matters more for gift-exchange. Using odesk employees, they either reward a direct large cash reward under high wage rate treatment in which \$4 per hour (higher than market wage) is directly presented to workers, their productivity is indifferent with the control in which the wage rate is \$3 per hour. However, when the high wage rate is unveiled by \$3 per hour plus a surprise bonus of \$1 per hour (\$3+\$1) to workers in "3+1" treatment, the productivity becomes significantly higher than control and direct high wage rate treatment. This study implies that how to present the gift in a more salient and perceptible way would elicit a large impact on worker' reciprocity behavior. In other words, the initial contract sets the reference point for employees and the surprising gifts triggers the reciprocity as they are higher than the reference point. Ockenfels et al. (2015) also find that presenting the wage in two steps increase rather than a single large increase would induce higher output and more honesty from employee.

Furthermore, context matters in the gift-exchange. If it is a competitive environment, the social preference concern may disappear (Hossain and Li, 2013). A field

experiment by Englmaier and Leider (2012) suggests that the effectiveness of gift exchange depends on workplace context, e.g., when the employers can receive bonus from worker's higher effort, and the positive responses to wage gifts mainly come from reciprocal workers.

Non-monetary gift is also used[5]. For example, Maréchal and Thöni (2016) conduct a field experiment on sales representatives by asking them to give potential buyers toothpaste as gift, and find that the gift significantly increases their sales revenue. Furthermore, the effect of the gift depends on the relationship between salesman and the potential buyer, e.g, the gift tends to hamper negotiations and reduces revenue for the first-time meet circumstance. In an audit study conducted in Chinese hospitals, Currie et al. (2013) demonstrate that gifts from patients to physicians reduce the prescription of unnecessary antibiotics and increase service quality, even for third parties associated with the gift giver. Kirchler and Palan (2014) study the effect of tipping and verbal compliments on service quality in Turkish fast food restaurants. Kosfeld and Neckermann (2011) find that congratulation card which honors the best performance significantly increase students' performance.

Goette and Stutzer (2008) compare the effectiveness of two different types of incentives for blood donation, and find that compared to control without gift, a lottery ticket significantly increases the number of blood donations , while a free cholesterol test, a non-monetary incentive does not. They argue that their no public image concern in their study, therefore the possible negative impact of material incentive may not exist.

All prior studies focus on the effect of gifts conditional on the workers has committed to a task or accepted a contract. We examine whether receiving in a gift for a pre-committed task could have any impact on their likelihood of staying in a non-required task. A study which shares similar protocol is Hossain and Li (2013) though they do not have the surprising gift stage. Their focus is about how social context affects individual decisions in the follow-up task, e.g., whether the task is framed as monetary related or social related. However, we are interested in studying

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[5]Some theoretical works analyze non-monetary gift. Kaplan and Ruffle (2009) shows that when search cost and uncertainty are important for recipients, in-kind gift enhances expected welfare better than cash. Ellingsen and Johannesson (2011) discusses these two types of gifts from the signal perspective. Specifically, non-monetary gift is considered as a credible signal of altruism and kindness. In contrast, The requesting of money signals of greed. Another theoretical work by Dur (2009) show that Besides offering high wage, giving attention is another way for managers to signal their altruism to workers. However, Duffy and Puzzello (2011) compare the efficiency of monetary and non-monetary gift exchange and find that money can enhance welfare compared to without money.

the impact of gift nature on the follow-up task. Furthermore, compared to their study which varies the monetary size in the follow-up task, we vary the gift size and examine its interaction with gift nature.

3. Experimental Design

Table 1: Experimental Design

		Gift Nature		
		Cash	Red Envelope	Control(No Reward)
Reward	Large (20 RMB)	45	45	48
Amount	Small (5 RMB)	46	46	

To investigate how the reward size and type influences the work performance, we implement a 2x2 factorial between-subject design for treatments, along with a control which does not have additional reward. In treatments, a monetary reward is offered in a surprising fashion in the middle of the experiment. The reward varies in amount and type (i.e., cash or enclosed in a red envelope).

Task The real-effort task is for participants to manually type and enter survey answers in Chinese into a Microsoft Excel spreadsheet. We choose survey data entry as the experimental task since it is a common task for the temporary research assistant jobs on campus. The only skills required are reading and typing in Chinese. The quantity and quality of the work is easy to evaluate. Each copy of the survey contains the answer to one survey question. It takes 2 to 3 minutes on average to enter the text into the spreadsheet.

Incentives The experiment consists of two stages. In the first stage, participants are given 50 copies of surveys and told to enter as many copies as they could in 40 minutes. Everyone is paid with a fixed amount of 60 RMB for their work in this stage. Although they are told to enter the surveys as accurately as they could, the payment in this stage is fixed and does not depend on the accuracy of their entries.

Upon completion of their work in the first stage, each participant receives 60 RMB in cash as promised. In addition, the participants are each offered with a surprising reward as a token of appreciation for their work in the first stage. Afterwards, they are asked if they are willing to stay to help with more survey entries in the second stage. The reward is surprising to the participants since they are only informed about the data-entry task and the fixed payment of 60 RMB in the first stage in the recruiting email. No information is given on the reward or the second stage of the experiment until the end of the first stage of the experiment.

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Figure 1: Red Envelope Used in the Experiment

The surprising reward varies in the type of presentation and amount. The RMB cash bills are given to each participant directly in the Cash treatments or enclosed in a $16.30cm \times 8.80cm$ opaque red envelope (Figure 1) in the two Red Envelope treatments. These red envelopes are commonly used for gifting at workplace. They have a generic design with "Best Wishes" printed in Chinese on the cover. They are conveniently available in many stores for several cents each so their monetary value is negligible. Similar to gift cards – the prepaid stored-value money card, the red envelope adds warmth and fuzziness to the cold, hard cash. Different from gift cards, the use of cash enclosed in the envelope is not restricted to any particular stores or related businesses. Therefore, cash wrapped in a red envelope in our experiment is a weak manipulation of the presentation of monetary gift which is equivalent to cash of the same amount. This design allows us to investigate the impact of a slightly more thoughtful presentation of a monetary gift on workers' reciprocity.[6]

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[6]In the money Origami treatment in Kube et al. (2012), the monetary gift was given in a form of an origami shirt (artistically folded out of a 5-euro bill) and a 2-euro coin (with a smily face drawn on it) glued together on a plain postcard. We believe that the generic red envelopes used in our study signal less time and effort invested by the employers compared to the unique design of smily face with the origami shirt in Kube et al. (2012).

Two amounts, 5 RMB and 20 RMB, are used. Five RMB is used as the small reward since it is about 8 percent of the 60 RMB fixed pay in the first stage and the price of a bottle of soft-drink beverage sold in vending machines on campus. Twenty RMB is used as the large amount of reward. It is about 33 percent of the 60-RMB fixed payment and the price of a McDonald's combo meal. Therefore, our choices of reward amount and type yield four experimental treatments, Large Cash (LC), Large Red Envelope (LRE), Small Cash (SC), and Small Red Envelope (SRE).

In all the treatments, participants are told that the reward is offered as a token of appreciation for the work that they have just completed. In the two Cash treatments, a 5 RMB or 20 RMB bill is given to the participants. Since the amount of cash reward cannot be observed directly with the envelopes in the two Red Envelopement treatments, the participants are asked to open their red envelopes to confirm the amount, while the experimenter publicly announces the reward amount.

Along with the surprising reward, each participant also receives a letter that asks for help with more survey entries for 1 RMB per piece in the second stage. As a monetary incentive, 1 RMB piece rate is substantially less appealing than the fixed pay of 60 RMB for 40 minutes work in the first stage.[7] We use this low incentive purposefully in the second stage to investigate the participants' willingness to reciprocate under a substantially less appealing incentive condition[8]. The participants are asked to decide individually and privately whether they would like to stay to continue to work, and if yes, how many copies (between 1 and 40) he or she wants to complete. They are asked to record his or her decisions on the letter and return it to the experimenter.[9] Those who choose to stay are given another 40 copies of survey and are asked to complete at least the number of copies that they have specified in their letters. Figure 2 presents the timeline of the experiment.

A post-experiment questionnaire is conducted before the participants' departure. Besides the demographic questions, the post-experiment questionnaire also include questions on participants' emotions in each stage of the experiment, attitudes towards different types of reward, as well as the reasons for leaving or staying after the first stage of the experiment.

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[7]Given the fact that each survey takes an average of 2.5 minutes to type, the 60 RMB for 40 minutes work is equivalent to 3.75 RMB per survey.

[8]Esteves-Sorenson (2017) also find that the piece rate scheme is more efficient at effort incentive than fixed payment scheme.

[9]The participants record their decisions individually and privately on whether to stay or to leave and the number of copies if staying. This procedure is designed to minimize any potential peer effects or coordination among some participants. No one changed the decisions after the decisions were submitted to the experimenter.

Compared to treatments, no such reward is offered in the control . In the control, the experiment proceeds to the second stage after each participant receives the 60 RMB payment for their work during the first stage. The participants are asked to decide whether to stay for more survey entries for the piece rate of 1 RMB, and if yes, how many copies (between 1 and 40) he or she wants to complete. Table 1 summaries the experiment design and reports the number of participants in each treatment and control.
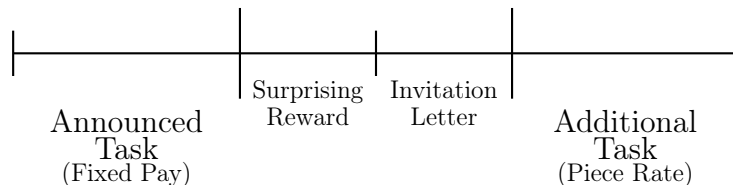

Figure 2: Experiment Timeline

The experiment was conducted at Tsinghua University, Beijing, China from Fall 2016 to Summer 2017. A total number of 230 undergraduate students, 116 men and 114 women, participated in 40 sessions, 8 sessions for each treatment. The average number of participants was 6 per session. We used a large computer lab, and the participants sat far away from each other to minimize the peer effects (Falk and Ichino, 2006). The participants were randomly assigned to the treatments with each person participating in only one treatment. Since all the participants were told that they were doing a temporary research assistant work for an economics professor, no one was aware that they were participating in an experiment. Each session lasted for about 100 minutes. The average payment was 82 RMB (around $13) per participant. Appendix C includes the post-experiment survey and Appendix D the experiment instructions.

4. Results

In this section, we report the treatment effects on work quantity including the unconditional number of copies entered in the additional task, the likelihood of participating in the task (i.e., the extensive margin), the number of copies they enter conditional on participation (i.e., the intensive margin), and the quality of their work in the additional task. We also investigate how individual perceptions mediate these effects. For ease of presentation, a reward presented as cash without a red envelope will be referred to as "cash", and a cash reward enclosed in a red envelope will be referred to as "red envelope". Each subject is treated as one independent observation in both non-parametric and regression analyses.
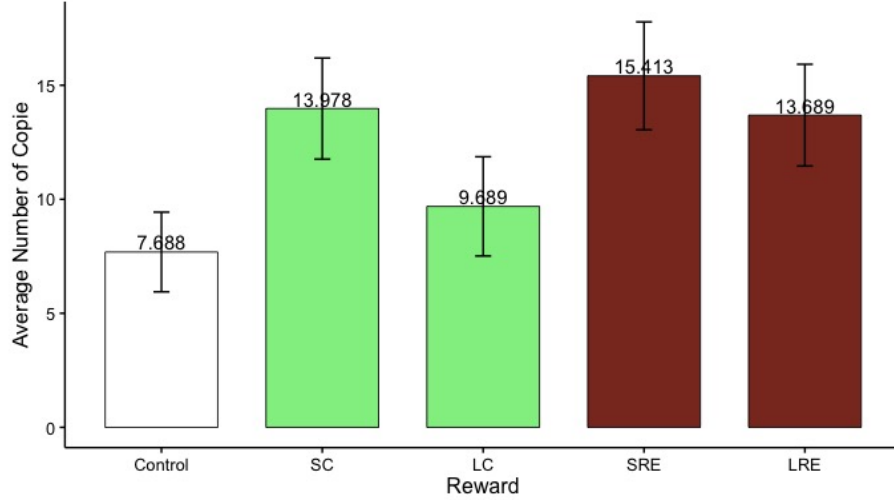
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4.1. Work Quantity

Figure 3: Unconditional number of Copies Entered in the Additional Task

To examine the treatment effects on participants' performance, we first compare the unconditional average number of survey entries between treatments and control. Figure 3 shows that when offered with the small cash or the small red envelope award, participants enter an average number of 13.978 and 15.413 surveys, both significantly higher than 7.688 in the control (SC > Control, $p = 0.019$; SRE> Control, $p = 0.013$, two-sided Wilcoxon rank-sum tests).[10] Interestingly, the large cash award leads to a slight, albeit insignificant, increase in the average performance, relative to the control (9.689 vs. 7.688, $p = 0.737$, two-sided Wilcoxon rank-sum tests). In sharp contrast, participants enter 13.689 surveys on average when receiving the large red envelope, significantly higher than 7.688 in the control treatment ($p = 0.019$, two-sided Wilcoxon rank-sum tests) and marginally higher than 9.689 in the LC treatment ($p = 0.071$, two-sided Wilcoxon rank-sum tests). In addition, we find no significant difference between the SRE and SC treatments ($p > 0.10$, two-sided Wilcoxon rank-sum tests), suggesting that the impact of cash and red envelope is similar when the award size is small.

In Table 2, we present a Tobit model to further analyze the treatment effects on the participants' overall performance. The dependent variable is the number of

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[10]The number of survey entries is coded as zero for those who choose not to participate in the additional task.

Table 2: Tobit Regression for the Unconditional Number of Copies

	(1)	(2)
Small Cash	7.185**	8.424***
	(3.028)	(3.027)
Large Cash	1.876	1.398
	(3.162)	(3.145)
Small RE	7.628**	8.024***
	(3.035)	(3.015)
Large RE	7.225**	7.703**
	(3.040)	(2.998)
First Stage Entry		0.660***
		(0.169)
Female		2.984
		(1.902)
Afternoon		−4.694
		(3.497)
Night		−3.518
		(2.296)
Observations	230	230
Log Likelihood	-545.169	-535.089
Pseudo R^2	0.010	0.028

Notes: (1) The dependent variable is the number of surveys entered by individual participants in additional task. It is coded as zero for those who choose not to participate in the additional task. (2) Marginal effects are reported. (3) Standard errors are reported in parentheses. (4) *p<0.1; **p<0.05; ***p<0.01

surveys entered by individual participants in the additional task. The main independent variables are the treatment dummies, Small Cash, Large Cash, Small RE, and Large RE. The omitted variable is the control. To control for other covariates what may influence the performance, in Column 2, we also include control variables such as participant's gender, performance in Stage 1, and the time dummies – morning (omitted), afternoon, or night – for the experimental sessions. Additionally, marginal effects are reported.

Regression results are consistent with non-parametric tests. In both columns, all treatment dummies except Large Cash are positive and significant ($p < 0.05$, two-sided χ^2 tests). Comparing between treatments, we find that the impact of Large RE is significantly higher than Large Cash (7.225 v. 1.876, $p = 0.045$ in Column 1; 7.703 v. 1.398, $p = 0.041$ in Column 2, two-sided χ^2 tests), while the difference between Small RE and Small Cash is not significant ($p > 0.10$, two-sided χ^2 tests). These findings indicate that although the impact of red envelope is similar to that of cash for a small monetary award, red envelope has more appealing impact on participant's overall performance than cold, hard cash for a *large* monetary award. These discussions lead to Result 1.

Result 1 (Treatment Effect on Work Quantity) *1a) Compared to the control, the number of survey entries is significantly higher when participants are offered with a small reward (cash or red envelope) or with a large red envelope. However, the number of survey entries is insignificantly different between the Large Cash treatment and the control.*

1b) The average number of survey entries is significantly higher when participants are offered with a large red envelope than with large cash.

4.2. Extensive and Intensive Margins

To understand what drive the treatment effect on the unconditional number of survey copies, We further investigate the participation rate in the additional task, i.e., the extensive margin, and the number of survey entries conditional on participation, i.e., the intensive margin. As shown in Panel A of Figure 4, the participation rate in the additional task is 37.5% in the control. Compared to control, this rate is significantly higher in SC (60.9%, $p = 0.023$, two-sided χ^2 tests), SRE (58.7%, $p = 0.039$, two-sided χ^2 tests), and LRE (62.2%, $p = 0.017$, two-sided χ^2 tests). However, it is 37.8% in LC, which is not significantly different from control ($p = 0.978$, two-sided χ^2 tests). We also find that the participation rate is very similar between red envelope and cash for the small award (58.7% vs. 60.9%, $p > 0.10$, two-sided χ^2 tests). While for the large award, the participation rate in LRE exceeds that in LC by 24.4 percentage points (62.2% vs. 37.8%, $p = 0.020$, two-sided χ^2 tests).
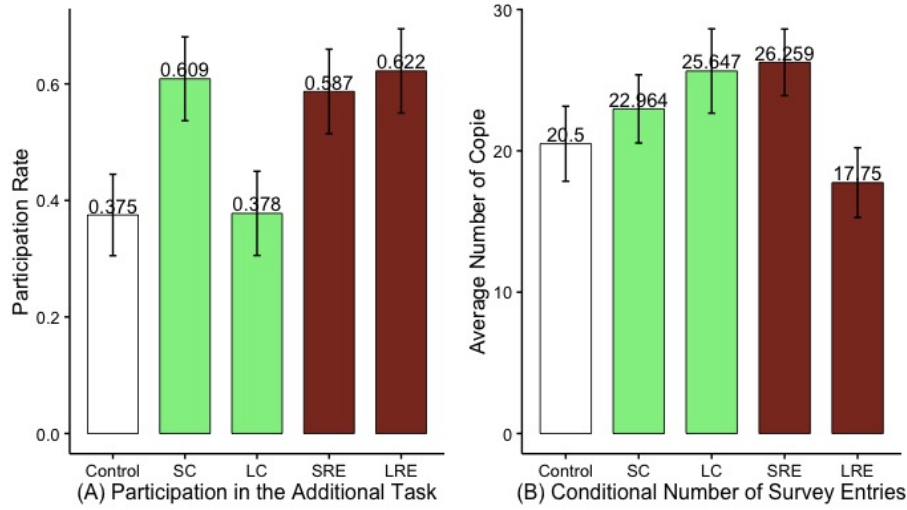
Figure 4: Extensive and Intensive Margins

In summary, the results on participation are consistent with Result 1. Specifically, red envelope motivates participation effectively in the additional task regardless of the size of monetary incentives while cash works under the small, but not the large incentive.

These findings are further confirmed in the Probit regressions in Columns 1 and 2 of Table 3. Again, all treatment dummies except LC is positive and significant in both specifications ($p < 0.05$, two-sided χ^2 tests). Moreover, the participation rate is significantly higher in LRE than in LC ($p = 0.013$, two-sided χ^2 tests) We summarize these findings below.

Result 2 (Extensive Margin: Participation) *2a) Compared to the control, participants are more likely to participate in the additional task when offered with a small reward either as cash or as red envelope. However, for the large reward, only the red envelope leads to higher participation.*

2b) The large red envelope induces a higher participation rate than the large cash award, while the types of the award do not influence participation for the low amount.

Next, we examine the number of survey entries conditional on the participation in the additional task (i.e., the intensive margin), shown in Panel B of Figure 3. First, no difference is found between treatments and control ($p > 0.10$, two-sided Wilcoxon rank-sum tests). The only difference is that under the large amount of award, the conditional number of survey entries is significantly *lower*, rather than higher, in the Large RE than in the Large Cash treatment ($p = 0.042$, two-sided

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Table 3: Participation and Conditional Survey Entries

	A. Participation (Probit)		B. Conditional Entries (OLS)	
	(1)	(2)	(3)	(4)
Small Cash	0.229**	0.263***	2.464	2.947
	(0.095)	(0.095)	(3.756)	(3.744)
Large Cash	0.003	−0.004	5.147	4.348
	(0.105)	(0.108)	(4.205)	(4.251)
Small RE	0.208**	0.224**	5.759	5.804
	(0.096)	(0.097)	(3.783)	(3.770)
Large RE	0.241**	0.257***	−2.750	−1.992
	(0.094)	(0.094)	(3.756)	(3.789)
First Stage Entry		0.018***		0.386*
		(0.006)		(0.206)
Female		0.118*		2.007
		(0.068)		(2.344)
Afternoon		−0.091		−2.689
		(0.126)		(4.129)
Night		−0.092		−2.689
		(0.083)		(2.689)
Constant			20.500***	12.570**
			(2.931)	(6.043)
Observations	230	230	118	118
R^2/Pseudo R^2	0.037	0.079	0.067	0.111

Note: The dependent variable of the Probit model in Columns 1 and 2 is the likelihood of participating in the additional task. Marginal effects are reported. The dependent variable of the OLS model in Columns 3 and 4 is the *conditional* number of survey entries. Standard errors are in parentheses. *p<0.1; **p<0.05; ***p<0.01

Wilcoxon rank-sum tests). These findings are further confirmed by the OLS analysis in Columns 3 and 4 of Table 3 with the dependent variable being the conditional number of survey entries. The comparison between the coefficients of Large Cash and Large RE is statistically significant in Column 3 (5.147 vs. -2.750, $p = 0.041$, F-test), though it becomes insignificant in Column 4 (4.348 vs. -1.992, $p = 0.105$) when more covariates are added to the regression. In summary, we do not find a consistent and robust result for the conditional number of copies.

Altogether, the analyses for intensive and extensive margin demonstrate that the treatment effects on the overall performance found in Result 1 are primarily driven by the treatment effects on participation, rather than on the conditional performance.

4.3. Work Quality

An ideal measure of work quality would be the degree of accuracy of the survey entries. In our experiment, however, it is prohibitively difficult to verify the accuracy for about 3,000 individual survey entries, each of which takes 2-3 minutes to type. Instead, we use the completion rate, a logistically simpler measure, as a proxy for work quality. One survey entry is considered as "complete" if the number of Chinese or English words and numerals that a participant enters to the Excel Spreadsheet is no less than the word count in the original survey. It is considered as incomplete, otherwise. For each individual participant, the average completion rate is calculated as the proportion of the surveys that he or she completes.
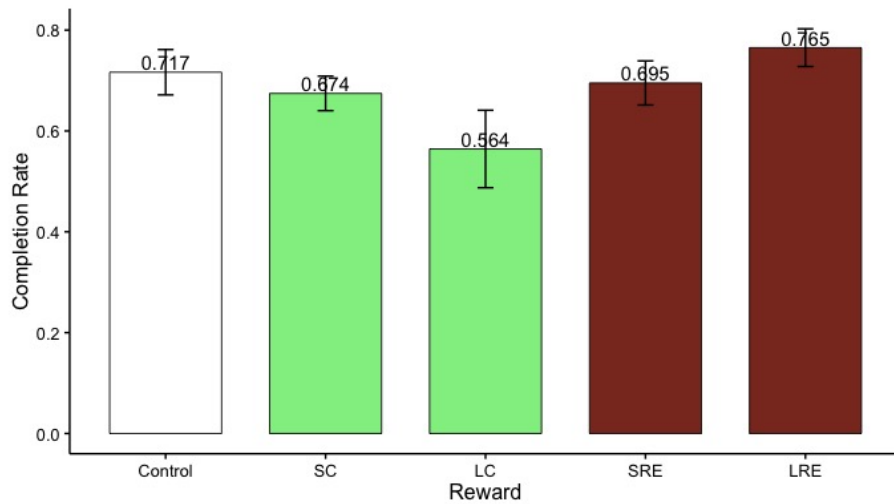

Figure 5: Completion Rate in the Additional Work

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As shown in Figure 5, the average completion rate varies from 0.564 to 0.765 in treatments, but none of them is significantly different from 0.717 in the control ($p > 0.10$, two-sided Wilcoxon rank-sum tests).[11] For the small award, we find that although the average completion rate increases slightly in SRE compared to in SC, the difference is not statistically significant (0.695 vs. 0.674, $p = 0.560$, two-sided Wilcoxon rank-sum tests). In contrast, the average completion rate in LRE is significantly higher than in LC (0.765 vs. 0.564, $p = 0.026$, two-sided Wilcoxon rank-sum tests) for the large award. The OLS regressions in Table 4 yield similar results. We find that the impact of LC on the average completion rate is significantly lower than in the control ($p < 0.05$ in Columns 1 and 2, F-test). In addition, the coefficient of LRE significantly exceeds that of LC (0.049 vs. -0.152, $p = 0.004$, Column 1; 0.054 vs. -0.168, $p = 0.001$, Column 2, F-test).[12] These findings suggest that the presentation of red envelope matters for work quality. Red envelope induces higher work quality than cash does, but its impact is only statistically significant for the large award. These results are summarized below.

Result 3 (Work Quality) *4a) Compared to the control, the survey entry completion rate is significantly lower when participants are offered with a large cash award.*
4b) For the small award, the survey entry completion rate is similar between cash and red envelope. For the large award, the completion rate is significantly higher with red envelope than with cash.

Though prior analyses suggest that the conditional number of copies under LC is higher than LRE, the results for quality provides us important insights on the quantity-versus-quality tradeoff conditional on one's participation in the additional task. Specifically, LC may have tried to reap more payments out of greater quantities. Unlike LC, LRE successfully helps curb the participants' temptations on pecuniary gains and induces them to choose *quality* over quantity in their work[13].

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[11]The average completion rate may seem low. This occurs due to our criterion on completion. In other words, a survey entry would be considered as incomplete, and the "complete" variable would take a value of zero if the number of words and numerals entered for a particular survey is less than the original survey.

[12]For robustness check, we relax the criterion on survey entry completion to 95% or 90%. That is, one survey entry is considered as "complete" if 95% or 90% of the total words are entered to the Excel Spreadsheet. New results are reported in Appendix B. For the 95% criteria, the impact of LC on the average completion rate is significantly lower than the control treatment ($p = 0.009$, F-test) and the LRE treatment ($p = 0.004$, F-test). For the 90% threshold, the impact of LC is significantly lower than the control treatment ($p = 0.009$, F-test) and the LRE treatment ($p = 0.007$, F-test). Therefore, the treatment effects on work quality discussed above are robust.

[13]Kim and Slonim (2012) also find that gift could induce different effect on work quantity and

Results 1-3 combined suggest that the nature of gift matters, but the effect depends on the amount. For the small award, red envelope and cash fare similarly regarding participants' overall performance, participations rate, and work quality. For the large award, however, red envelope has more appealing impact than cash does across the board. When given a large red envelope, participants' overall performance is better, participation rate is higher, and participants are more likely to choose quality over quantity than when they are given the hard, cold cash. Therefore, red envelope, a more thoughtful presentation of the award, is more effective than cash in motivating workers to work, especially under large monetary incentives.

4.4. Perceptions

In this section, we investigate why red envelope and cash have different impact especially under large monetary incentives. According to Heyman and Ariely (2004), people response differently to payment in a social market compared to a monetary market. In social-market relationships, effort will be at a high level and insensitive to the increase of payment level. We expect that red envelope contains rich social and cultural meanings compared to the same amount of cash gift. Therefore, we explore whether participants perceive these two types of gifts differently. If so, how their perceptions drive their decisions.

In the post-experimental survey, we ask subjects about their perceptions of cash or red envelope in different treatments, and find that their impressions on these two types of gifts is quite different between LC and LRE[14]. Therefore, we will specifically focus on the comparison between LC and LRE.

Comparing the distribution of five reasons in Large Cash and Large Red Envelope, we find that the main difference comes from three reasons: reason 2-"appreciation", reason 3-"luck", and 4-"additional income". However, reason 3-"luck" is rarely chosen by subjects in cash treatment[15]. So we will focus on the perception of "appreciation" and "additional income". Figure 6 presents the percentage of choosing each reason in LC and LRE treatment. Specifically, under large amount, 60% of workers who

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work quality. They run a hybrid lab-field experiment where participants entered survey data for a well-known charitable organization. Workers received either a high or low fixed wage framed as either fair or unfair. While the fairness manipulation did not affect the quantity or quality of work, the wage gift had an effect on the quality of the work but not the quantity.

[14]Figure B.3 in the Appendix B presents the distribution of each reason for favoring red envelope or cash bonus respectively. The reasons include (1) a nice surprise; (2) make me feel appreciated; (3) represent luck; (4) additional income; (5) other.

[15]Only 1.1% subjects in cash treatment choose "luck", which is significantly lower than those in red envelope treatment (15.39%, $p < 0.001$, two-sided test of proportions)

Table 4: Average Completion Rate

	(1)	(2)
Small Cash	−0.042	−0.031
	(0.067)	(0.065)
Large Cash	−0.152**	−0.168**
	(0.075)	(0.074)
Small RE	−0.021	−0.012
	(0.067)	(0.066)
Large RE	0.049	0.054
	(0.067)	(0.066)
First Stage Entry		0.007*
		(0.004)
Female		−0.022
		(0.041)
Afternoon		−0.131*
		(0.072)
Night		−0.096**
		(0.047)
Constant	0.717***	0.649***
	(0.052)	(0.105)
Observations	118	118
R^2	0.075	0.152

Note: Standard errors are in parentheses. *p<0.1; **p<0.05; ***p<0.01

receive red envelope like it because they perceive an appreciation from this reward (vs 31.11% in Cash, $p = 0.006$, two-sided test of proportions).In contrast, 37.78% of cash receivers report that they like the reward because of additional income (only 15.56% in Red Envelope, $p = 0.017$, two-sided test of proportions). This indicates that workers who receive cash reward pay more attention to their income. Suppose that subjects consider the sum of surprising gift and the first-stage payment as the income reference point, they would be less likely to participate in the additional task when the gap between reference point and the second-stage payment is large.[16] However, red envelope may turn people' attention from income difference to appreciation, therefore, the negative impact of large reward may be alleviated.
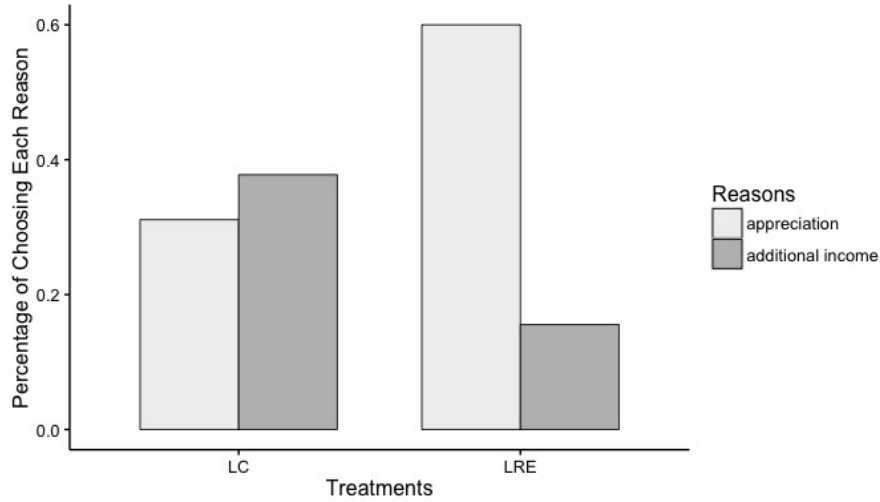

Figure 6: Reasons That People Like to Receive Cash or RE

To further investigate this conjecture, we investigate how the perception of large red envelope and cash affects participation in the additional task. Specifically, whether perception of appreciation and income play a role in individual decision-making. Tables 5 and table 6 report mediation tests for these two perceptions respectively. In table 5, the dependent variables in columns (1), (2) and (4) are the participation dummy, while in column (3) it is a dummy variable which indicates whether subject chooses "appreciation" as a reason for favoring red envelope/cash. The Large RE treatment dummy in Column (1) is positive and significant at 1% level,

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[16]In fact, in the post-experiment survey, subjects who chose not to stay in the additional task reported that a major reason is that the wage in the additional task is too low.

suggesting that compared to large cash, subjects who receive large red envelope are more likely to participate in the additional task. The appreciation dummy in Column (2) is also positive and significant at 1% level, indicating that those who believe that the gift, no matter whether it is cash or red envelope, represent appreciation, are more likely to participate. Furthermore, the positive and significant Large RE in Column (3) shows that compared to large cash, large red envelope is more likely to make people feel appreciated. Comparing column (4) with (1), we find that the when appreciation is added to the regression, the marginal effect of red envelope decreases from 0.298 to 0.234. This implies that subjects' perception of appreciation is one of the channels that help red envelope to promote the likelihood of participation.

Similarly, table 6 presents the effects of additional income. The first 4 columns are similar to table 5 except we change the appreciation dummy to income dummy. Comparing column (4) with (1), we find that the marginal coefficient of red envelope decreases from 0.298 to 0.260 after controlling for income. In column (5), we control for both appreciation and income, and find that the marginal effect of LRE further decreases to 0.199, and its effect becomes weakly significant. Altogether, these results show that perceiving appreciation more and monetary income less would make people more likely to participate in the additional task, and compared to large cash, large red envelope is more effective to promote such perceptions.

Further, we use bootstrapping method in Tingley et al. (2014) to test the mediation effects[17]. The mediation test for appreciation is significant. Specifically, the average causal mediation effect (ACME) is 0.072 ($p = 0.032$), which indicates that the indirect effect of mediation-appreciation is significant. The proportion of mediation effect is 25.886% ($p = 0.041$). The mediation test of additional income is not significant. Then we define a new mediation variable which indicates choosing appreciation while not choosing income[18]. It shows that the average causal mediation effect (ACME) becomes 0.108 ($p = 0.010$), and the proportion of mediation effect becomes 39.392% ($p = 0.017$). This implies that combining both appreciation and income perception together is a very important mediation for the causal effect of red envelope on participation.

Result 4 (Perceptions of Gift Presentations) *Under large amount, the cash reward in a red envelope is more likely to be perceived as the employer's appreciation and less likely to be perceived as additional income. These differences in perceptions*

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[17]We use bootstrapping method instead of Sobel test because the Sobel test only have adequate power under large sample size, and only can be used for linear regression.

[18]When subject chooses appreciation and doesn't choose income, the value of this mediation variable is 1; Otherwise it's 0.

Table 5: Mediation Test of Appreciation Perception

	Participate	Participate	Appreciation	Participate
	(1)	(2)	(3)	(4)
Large RE	0.298***		0.328***	0.234**
	(0.105)		(0.104)	(0.115)
Appreciation		0.334***		0.281**
		(0.105)		(0.113)
First Stage Entry	0.030***	0.023**	0.019*	0.027**
	(0.011)	(0.011)	(0.011)	(0.011)
Female	−0.035	0.002	−0.128	−0.001
	(0.112)	(0.114)	(0.111)	(0.116)
Afternoon	0.094	0.171	−0.249	0.162
	(0.253)	(0.245)	(0.202)	(0.247)
Night	0.036	0.094	−0.233*	0.107
	(0.135)	(0.137)	(0.130)	(0.142)
Observations	90	90	90	90
Log Likelihood	-55.156	-54.322	-54.606	-52.315

Note: This table reports the marginal effects. Standard errors are in paren-
theses. *p<0.1; **p<0.05; ***p<0.01

Table 6: Mediation Test of Additional Income Perception

	Participate	Participate	Income	Participate	Participate
	(1)	(2)	(3)	(4)	(5)
Large RE	0.298***		−0.205**	0.260**	0.199*
	(0.105)		(0.091)	(0.110)	(0.119)
Income		−0.280**		−0.224*	−0.201
		(0.116)		(0.125)	(0.127)
Appreciation					0.268**
					(0.115)
First Stage Entry	0.030***	0.029***	0.006	0.032***	0.029**
	(0.011)	(0.011)	(0.009)	(0.011)	(0.012)
Female	−0.035	−0.034	0.001	−0.036	−0.002
	(0.112)	(0.111)	(0.095)	(0.113)	(0.117)
Afternoon	0.094	0.097	0.030	0.084	0.147
	(0.253)	(0.250)	(0.244)	(0.252)	(0.250)
Night	0.036	0.039	0.091	0.051	0.111
	(0.135)	(0.132)	(0.106)	(0.136)	(0.142)
Observations	90	90	90	90	90
Log Likelihood	-55.156	-56.259	-48.553	-53.637	-51.113

Note: This table presents the marginal effects. Standard errors are in parentheses. *p<0.1; **p<0.05; ***p<0.01

can at least partially explain the treatment difference between LRE and LC.

In sum, our results show that how to present the gift matters, but the effect depends on the amount. When the gift amount is small, the cash gift and cash enclosed in a red envelope have similar impact on the worker's performance. When the gift amount is large, however, red envelope dominates cash across the board because of the change of perception. In the appendix, we construct a simple behavioral model to qualitatively illustrate the difference between LRE and LC, and show that the larger amount the surprising gift, the less likely the subjects would participate in the additional task. However, red envelope make people weight more on appreciation, and if this effect is strong enough, people would still stay under the large incentive.

5. Conclusion

A variety of gifts have been used to promote employer's productivity in the workplace, In this study, we conduct a lab in the field experiment to quantify the effect of red packet on worker's behavior under different monetary sizes. We find that red envelope is more effective than cash bonus for encouraging participants to stay in additional task. More interestingly, it shows that the nature of gifts is particular important when the large incentive is used. Under large amount, workers who receive red envelope are more likely to participate in the additional task and exert higher work quality compared to those cash receivers. While there is no difference for these two types of gifts under the small incentive.

We also observe that large cash induces negative incentive effect on participation. One possible reason is that people may use their first-stage income including the surprising gift as a reference point, thus when the second stage income is much lower than the first-stage, they are less likely to participate. However, Red envelope helps to motivate worker's pro-social feelings and induce them to pay more attention on appreciation feeling instead of monetary income. Therefore, such gift promotes higher productivity of workers than cash.

Though we use red envelope in our experiment, this can be extended to studies using other types of gifts. Altogether, our study implies that when referring to incentive effect, not only the incentive size but the nature of gifts also matters.

It is important for employers to choose the right types of gifts with the appropriate amount to achieve its efficient use.

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Appendix

Appendix A. Model

In this section, we propose a behavioral model to explain the findings in the experiment.

Appendix A.1. The Model

An employee decides whether she would like to participate in the additional entry task after she receives a surprise reward. If choosing to stay, then she will make a decision about how many copies she would enter and the effort exert to each copy.

Denote that an employee conditional on staying decides to enter additional survey with quantity q, and exert effort e to each copy. e can be also regarded as the proxy of entry quality of each survey copy[19]. The more efforts individual exerts in each copy, the higher quality (i.e. higher completion rate or lower error rate) the entered content is.

The employer receive a return which is associated with both quantity and quality of the entry work. The payoff of employer in the additional work is given by

$$v_P = e \cdot q - w \cdot q \tag{A.1}$$

w is the wage paid to employee. The partial derivative of payoff with respect to quantity q is monotonic increasing with quality e. We underline that quantity and quality are actually complementary in the evaluation of work. In our situation, the survey copies entered by workers is useful for principal only when each of them has a low error rate or high completion rate. This payoff setting is also reasonable in many other workplaces.

The payoff of the employee is

$$v_A = w \cdot q - C \cdot e \tag{A.2}$$

Where the C is the marginal cost of work effort. Since more elaborate work costs more time. Employees allocate their constrained time between quantity and quality. If they choose to enter a higher number of copies, they will exert fewer efforts in each single copy. In the other way, if they choose to do more elaborated work and

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[19]In our experiment, it is the average completion rate of each survey copy by a worker.

increase quality, they have to enter fewer copies. The constraint condition is given by

$$q + b \cdot e = d \qquad (A.3)$$

Where b is the relative time consumption rate of quality to quantity[20]. d is the total time constraint. The employee has a preference for reciprocal behavior. She has social preference and care about the employer's payoff[21]. The employee's utility is given by

$$u = m(\theta, \Delta w) \cdot v_P + (1 - m(\theta, \Delta w)) \cdot v_A \qquad (A.4)$$

Where m is the weight that individual puts on her employer's payoff. Accordingly, 1-m is the weight on her own payoff. Refer to Cox et al. (2007) that when agent has a higher emotional state toward the principal, he would care more about the principal's payoff. In our setting, the employee's emotional state toward the employer is determined by two elements: the emotional feeling when she receive surprising gift (θ) and the relative wage of additional task compared to the initial wage (Δw). Individual's weight on their social preference to employer is determined by:

$$m = \beta \cdot \theta + (1 - \beta) \cdot f(\Delta w) \qquad (A.5)$$

with

$$\theta = \lambda \cdot R + \kappa \qquad (A.6)$$

$$f(\Delta w) = \begin{cases} w - w_r, w > w_r \\ \sigma(w - w_r), w < w_r \end{cases} \qquad (A.7)$$

θ is a compound measurement of individual's emotion like happiness, pleasure, proud, etc. We indicate in (A.6) that the emotional feeling is a linear increasing function of surprise reward amount received by individual, R[22]. λ is the marginal effect of reward on emotion. κ is a constant intercept.

$f(\Delta w)$ is the reference-dependent utility of wage in which w_r is the reference wage/reference point(Ockenfels et al. (2014), Cohn et al. (2014), Grund and Sliwka (2007)). Similar with Sliwka and Werner (2017), we incorporate loss aversion assumption that when employee obtains a wage lower than their reference wage, loss increases much faster than gains. σ is the loss averse coefficient ($\sigma > 1$).

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[20]If we treat quantity and quality as two alternative production factors, b can also be regarded as the relative price of quality

[21]Dellavigna et al. (2016) underlines the important role of social preference in the incentive design of the workplace. It shows that workers behave substantial social preference to their employers. They exert more efforts when their work is associated with their employer's value, which shows a pattern of "warm glow".

[22]$R \in \mathbf{R}^+$. In our experiment, R is a discrete variable, and $R \in \{5, 20\}$

β is the weight on emotional state. Similarly, 1-β is the weight on relative wage income. Therefore, the weight of individual's social preference is determined by her emotional state and relative wage income. This implies that employees would put a higher weight on employer's utility either when they are in good mood temporarily or receive a higher relative wage from employer. From Sliwka and Werner (2017), employee's previous wage level has a propensity to become her reference wage and has an influence on the work effort. We denote that the reference wage is the piece rate employees have received in their initial stage work, i.e. $w_r = \frac{I+R}{N}$. I is the fixed payment in the initial stage[23]. N is the number of copies entered in the initial stage.

Appendix A.2. Analysis

Each employee maximizes her utility by deciding whether to stay, how many copies to enter and the entry effort (quality) of each copy. Since it is a sequential decision process, we first concentrate on quantity and quality choice of stayed employees, Then we use backward induction to analysis the participation decision.

The utility maximum problem of employee is given by

$$max \quad u = m(eq - wq) + (1 - m)(wq - Ce)$$
$$st. \ q + b \cdot e = d \tag{A.8}$$

Lemma 1 *There is a threshold β^* such that: When $\beta > \beta^*$, the social preference weight m is increasing with respect to the reward amount R; When $\beta < \beta^*$, m is decreasing with respect to R; When $\beta = \beta^*$, m is a constant.*

Proof *In our setup, wage of employees is always lower than reference wage, hence they are loss averse. Combining (A.5), (A.6), (A.7):*

$$m = [\beta\lambda - \frac{(1-\beta)\sigma}{N}]R + \beta\kappa + (1 - \beta)\sigma(w - \frac{I}{N}) \tag{A.9}$$

When $\beta > \beta^* = \frac{\sigma}{\lambda N + \sigma}$, m is linear increasing with respect to R; When $\beta < \beta^*$, m is decreasing with respect to R; When $\beta = \beta^*$, m is a constant.

The relationship between m and R is in Figure A.1. The slope of the linear function is increasing as β increases. In Result section, we show that employees who receive red envelope are more likely to have a perception of appreciation, good luck and care less about monetary income than cash receivers. Therefore, it is straightforward to assume that $\beta_{RE} > \beta_{Cash}$, i.e. workers who receive red envelope have higher weight on their emotional state, while they would have higher weight on relative wage income if receiving cash. Further, we make the following assumption.
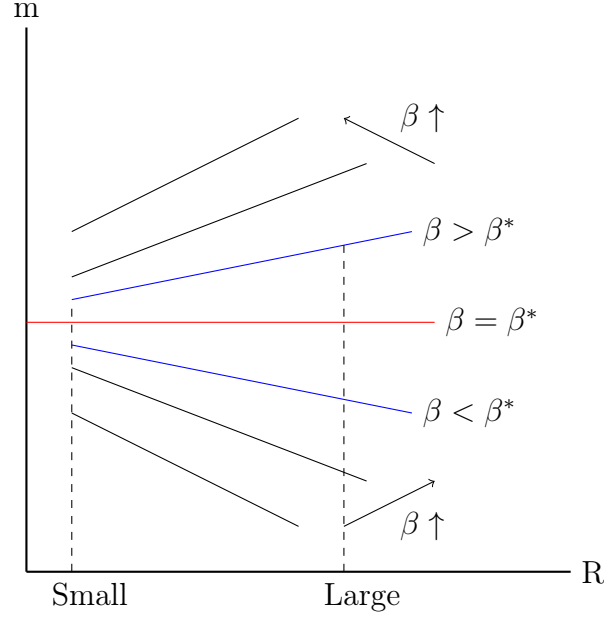
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[23]In our experiment, I=60RMB.

Figure A.1: Social preference weight m and reward amount R

Assumption 1 *The parameter β of an employee when receiving red envelope and receiving cash satisfies: $\beta_{RE} > \beta^* > \beta_{Cash}$.*

Proposition 1 *If Assumption 1 holds: (1) When receiving cash, individual's work quality is decreasing with respect to R. While her work quantity is increasing with respect to R; (2) When receiving red envelope, individual's work quality is increasing with respect to R. While her work quantity is decreasing with respect to R; (3) under large reward size, individual's work quality is higher when receiving red envelope, while work quantity is higher when receiving cash.*

Proof *The first order condition of utility maximization problem in (8) with respect to q and e is*

$$
\begin{aligned}
e^*(m) &= \frac{(2m-1)(b+C)}{2mb} \\
q^*(m) &= d - \frac{(2m-1)(b+C)}{2m}
\end{aligned}
\tag{A.10}
$$

From lemma 1 and assumption 1, we can derive that under large reward amount

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$m_{RE} > m_{Cash}$, *which indicates*

$$e^*(m_{RE}) > e^*(m_{Cash}), \ q^*(m_{RE}) < q^*(m_{Cash}) \qquad (A.11)$$

This implies that individual would exert more effort to increase the work quality, while decrease the work quantity when they receive red envelope. When incentive size increases, m_{RE} is increasing with respective to R. While m_{Cash} is decreasing with respective to R. Therefore, $e^*(m_{Cash}(R))$ is decreasing with respective to R, i.e. workers who receive cash will exert less effort and decrease work quality when reward amount increases (Figure 5). In turn, $e^*(m_{RE}(R))$ is increasing with respective to R, i.e. workers who receive red envelope will exert more effort and increase work quality when reward amount increases (Figure 5). $q^*(m_{RE}(R))$ is decreasing with respective to R, i.e. workers who receive red envelope will decrease work quantity when reward amount increases (Figure 4(B)). $q^*(m_{Cash}(R))$ is decreasing with respective to R, i.e. workers who receive cash will increase work quantity when reward amount increases (Figure 4(B)).

Conclusions of proposition 1 are consistent with the findings in the experiment. The intuition can be summarized as follows: Red envelope induces employees with higher perception of pro-social feeling like proud, happiness etc., and care less about their wage income inequality (i.e. RE induces a higher value of β). In this circumstances, employees would put more weight on their social preference for employers' payoff in utility function ($m \uparrow$). To maximize utility employees would take actions to reciprocate employers. In our setting, employers obtains more benefits from quality improvement than quantity improvement[24]. Therefore, under time constraints employees would increase the quality and decrease quantity.

Then we analyze the decision of participating in the additional work. When making decision of whether to stay, the utility function of individual is given by

$$U = u - \epsilon \qquad (A.12)$$

u is the utility function formalized in equation (A.4). We normalize the utility to zero when individual choose to quit. Otherwise she would obtain utility u net an opportunity cost ϵ. ϵ is a random variable which satisfies a CDF of G(.). The probability of staying is given by

$$P = Prob(u - \epsilon > 0) = G(m(e^*q^* - wq^*) + (1-m)(wq^* - Ce^*)) \qquad (A.13)$$

---

[24]When quantity increases, employers have to pay more wage to workers.

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Where e^*, q^* are the optimal effort and quantity individual would choose when she has stayed, which are presented in equation (A.10).

Assumption 2 *(1) $(b+C)(b+d) - 2bd > 0$; (2). The parameter β of an employee when receiving cash satisfies: $\beta_{Cash} > \beta^{**25}$.*

Proposition 2 *Under Assumption 1 and 2, individual's probability of participation is increasing with respect to R when receiving red envelope, while decreasing with respect to R when receiving cash.*

Proof *Combining (A.9) with (A.12), and taking the partial derivative of P with respect to m:*

$$\frac{\partial P}{\partial m} = g \cdot \frac{1}{4m^2 b}[-(b+C)^2 + 4m^2(b+C)(b+d) - 8m^2 bd] = 0 \qquad (A.14)$$

$$m^* = \frac{b+C}{2\sqrt{(b+C)(b+d) - 2bd}} \qquad (A.15)$$

From Assumption 2 (1), when $m > m^*$, P is increasing with respect to m; When $m < m^*$, P is decreasing with respect to m. Assumption 2 (2) implies that $m_{Cash} > m^*$ always satisfies. Then $m_{RE} > m^*$ also satisfies. Therefore, P is increasing with respect to m for both cash receivers and RE receivers. The relationship between P and m is shown in Figure A.2. From lemma 1, m is increasing with respect to R when receiving red envelope, which implies that P is increasing with respect to R when receiving red envelope; Likewise, m is decreasing with respect to R when receiving cash, which implies that P is decreasing with respect to R when receiving cash.

Proposition 2 indicates that when both Assumption 1 and 2 are satisfied, we can obtain the participation rate pattern shown in Figure 4(A).

---

[25] $\beta^{**} = \frac{\frac{\sigma \bar{R}}{N} - \sigma(w - \frac{I}{N}) + \frac{b+C}{2\sqrt{(b+C)(b+d) - 2bd}}}{(\lambda + \frac{\sigma}{N})\bar{R} + \kappa - \sigma(w - \frac{I}{N})}$, $\bar{R}$ is the upper bound of cash reward amount. If $\bar{R} \to +\infty$, then $\beta^{**} = \beta^* = \frac{\sigma}{\lambda N + \sigma}$. Therefore, β_{Cash} which satisfies $\beta^{**} < \beta_{Cash} < \beta^*$ exists as long as $\bar{R} < +\infty$.
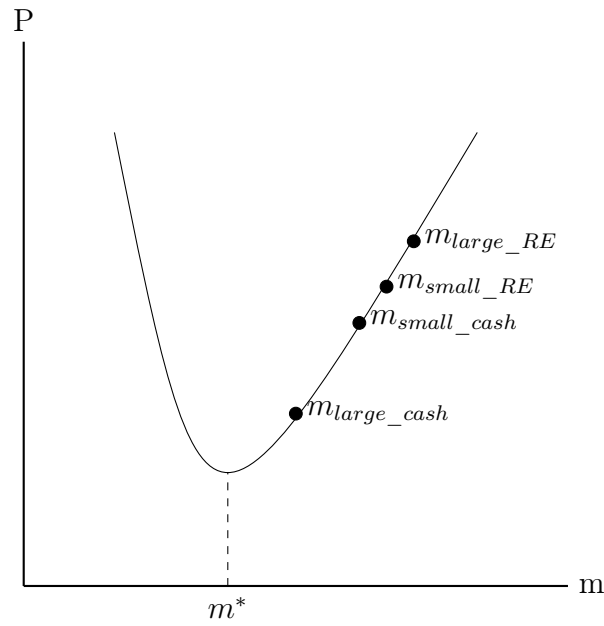
Figure A.2: Participation probability P and social preference weight m
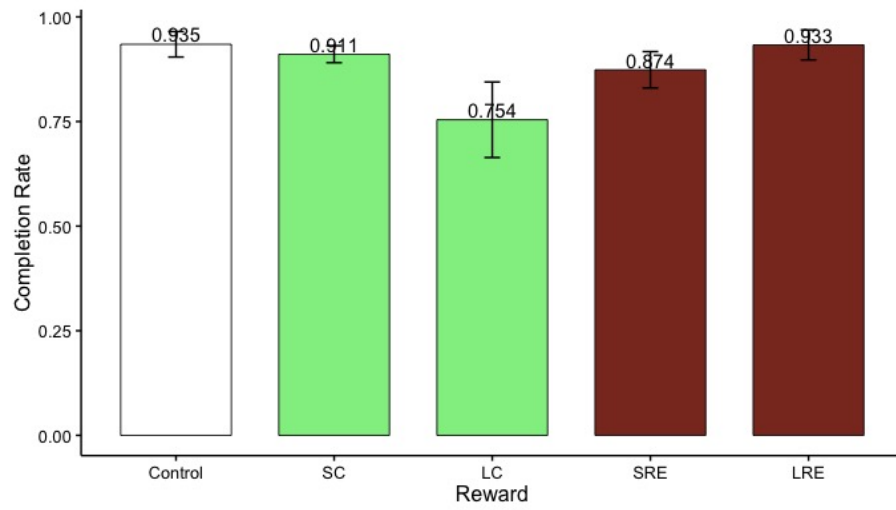
Appendix B. Tables and Figures

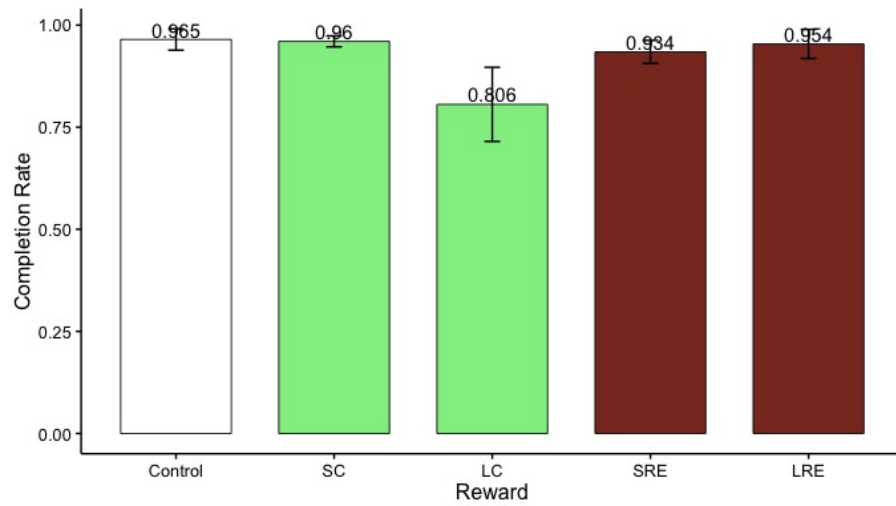Figure B.1: Completion Rate in the Additional Work (95% Threshold)

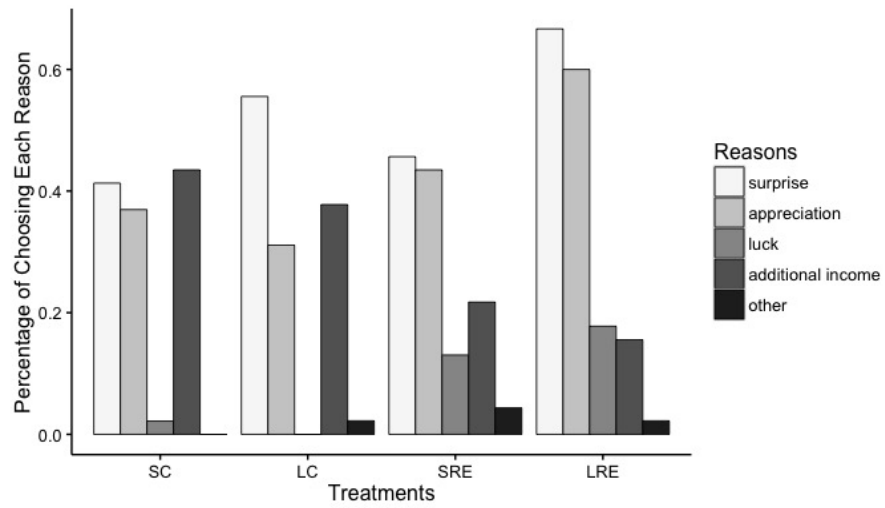Figure B.2: Completion Rate in the Additional Work (90% Threshold)

Figure B.3: Reasons That People Like to Receive Cash or RE

Table B.1: OLS Regression of Completion Rate in Additional Task on Treatments (95% Threshold)

	(1)	(2)
Small Cash	−0.024	−0.018
	(0.064)	(0.064)
Large Cash	−0.180**	−0.193***
	(0.072)	(0.073)
Small RE	−0.061	−0.057
	(0.065)	(0.065)
Large RE	−0.001	0.0003
	(0.064)	(0.065)
First Stage Entry		0.006
		(0.004)
Female		−0.030
		(0.040)
Afternoon		−0.030
		(0.071)
Night		−0.060
		(0.046)
Constant	0.935***	0.869***
	(0.050)	(0.103)
Observations	118	118
R^2	0.076	0.118

Note: Standard errors are in parentheses. *p<0.1; **p<0.05; ***p<0.01

Table B.2: OLS Regression of Completion Rate in Additional Task on Treatments (90% Threshold)

	(1)	(2)
Small Cash	−0.005	−0.001
	(0.058)	(0.057)
Large Cash	−0.159**	−0.173***
	(0.064)	(0.065)
Small RE	−0.030	−0.028
	(0.058)	(0.058)
Large RE	−0.011	−0.012
	(0.058)	(0.058)
First Stage Entry		0.005*
		(0.003)
Female		−0.027
		(0.036)
Afternoon		−0.012
		(0.063)
Night		−0.037
		(0.041)
Constant	0.965***	0.887***
	(0.045)	(0.093)
Observations	118	118
R^2	0.074	0.112

Note: Standard errors are in parentheses. *p<0.1; **p<0.05; ***p<0.01

Appendix C. Post-experiment Survey

Survey Questions

Name:_____Gender:_____Computer ID:_____

Thanks again for your participation in the RA work. To improve our work, we hope to invite you to finish this survey.

1. How did you feel in the first round of entry work?
    (a) Extremely unhappy
    (b) Unhappy
    (c) Feeling nothing
    (d) Happy
    (e) Extremely happy
    (f) If you have any other feelings, please describe them:

2. How did you feel when you received the 20 RMB cash bonus/5 RMB cash bonus/ 20 RMB red envelope/ 5 RMB red envelope reward? (Treatment Only)
    (a) Extremely unhappy
    (b) Unhappy
    (c) Feeling nothing
    (d) Happy
    (e) Extremely happy
    (f) If you have any other feelings, please describe them:

3. How did you feel in the second round of entry work? (For those who stayed only)
    (a) Extremely unhappy
    (b) Unhappy
    (c) Feeling nothing
    (d) Happy
    (e) Extremely happy
    (f) If you have any other feelings, please describe them:

4. Why did you choose to take participate in the additional work? (For those who stayed only)

5. Why did you choose to leave? (For those who left only)

6. How did you choose the number of copies in the additional work? (For those who stayed only)

7. Why do you like to receive red envelope/cash bonus? (Treatment only)
    (a) It's a surprise

769   (b) I can feel appreciation and recognition from the employer

770   (c) It is a symbol of happiness and luck in traditional Chinese culture

771   (d) I can receive additional income

772   (e) Other reasons

773 8. Which reward do you prefer, 5 RMB RE or 5 RMB cash? (RL, BL Treatments
774   + Control Only)

775   (a) 5 RMB RE

776   (b) 5 RMB cash

777   (c) They are indifferent

778 9. Which reward do you prefer, 20 RMB RE or 20 RMB cash? (RH, BH Treat-
779   ments + Control Only)

780   (a) 20 RMB RE

781   (b) 20 RMB cash

782   (c) They are indifferent

Appendix D. Experimental Instructions

The contents of instructions are the same for all treatments except for those in square brackets, which are treatment specific.

Announced Task

Welcome to participate in our survey entry work.

Do not talk to anyone or use the cell phone during the work. Please keep your phone silent or shut it down. If you have any questions, please raise up your hand. The staff will come to help you.

Attention: Do not mark on any questionnaires!

This work will last for 40 minutes. You will receive a payment of 60 RMB. The payment is offered when the time is up. The rules are as follows:

1. Open the Microsoft Excel file called "Survey Questionnaire" on your computer desktop.

2. You will receive 50 copies of ordered questionnaires. The number is on the top left.

3. Please enter the answer of the second question into the "content" column (highlight in yellow) of "Survey Questionnaire" spreadsheet. **Don't forget to save the file during the entry process.** Notice: Please enter the content in numerical sequence of the questionnaire. The sequence is not allowed to be changed!

4. This work will last for 40 minutes. We'll announce publicly when the time is up.

(40 minutes later) The time is up. Please stop typing. Now We're going to offer the payment.

Surprising reward and invitation letter

[Control: Meanwhile, We have prepared a letter for every RA. Please read and fill in the letter carefully.

BH: In return for your hard work, we will give you an additional 20 RMB cash bonus. Please stay at your seat and wait for the staff to deliver the bonus. Meanwhile, we have prepared a letter for every RA. Please read and fill in the letter carefully.

BL: In return for your hard work, we will give you an additional 5 RMB cash bonus. Please stay at your seat and wait for the staff to deliver the bonus. Meanwhile, we have prepared a letter for every RA. Please read and fill in the letter carefully.

RH: In return for your hard work, we will give you an additional RE reward. Please stay at your seat and wait for the staff to deliver the reward. (Announce publicly when all RAs have opened up their RE.) Everyone received 20 RMB in the RE. Meanwhile, we have prepared a letter for every RA. Please read and fill in the letter carefully.

RL: In return for your hard work, we will give you an additional RE reward. Please stay at your seat and wait for the staff to deliver the reward. (Announce publicly when all RAs have opened up their RE.) Everyone received 5 RMB in the RE. Meanwhile, we have prepared a letter for every RA. Please read and fill in the letter carefully.]

Content of the letter:

Thanks for your participation.There are some more copies of survey needed to be entered. We will pay you 1 RMB per copy for this additional task.

- *If you do not want to enter more copies, please write down zero. Then you can leave.*

- *If you want to enter more copies, please write down the number of copies you want to type (you can choose any number between 1 to 40 copies). If you choose to enter y copies, then you are going to be paid y RMB when you finish your work.*

Please fill in the following information:

Name:_____ Student ID:_____ Computer Number:_____

I would like to enter_____copies.

Please hand in this sheet to our staff. Thank you.

If your choice is zero copy, you can leave right now. If your choice is larger than zero copy, please stay at your seat.

Additional Task

Thank you for participating in the additional entry task. The rules are as follows:

1. Please close "Survey Questionnaire" and open "Survey Questionnaire2" on your desktop.

2. You will receive 40 copies of ordered new questionnaires.

3. Please enter the answer of the second question into the "content" column (highlight in yellow) of "Survey Questionnaire2" spreadsheet. **Don't forget to save the file during the entry process.** Notice: Please enter the content in numerical sequence of the questionnaire. The sequence is not allowed to be changed!

4. Please enter the number of copies you have written in the letter.

5. Please raise up your hand when you finish the work.