

Does Money Illusion Still Matter After Some Economics Education?*

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Abstract

“Money Illusion” is the notion that people appear to make systematic mistakes in assessing nominal versus real changes. This paper investigates how much money illusion still remains after people receive some formal education in economics. It also documents the reasoning that leads people to money illusion. Specifically, it surveys undergraduates for their reactions to scenarios that involve purely nominal changes. The evidence consistently reveals significant money illusion – both statistically and economically – through mental accounting in one scenario and through direct and indirect effects in other scenarios. There is little evidence that economics education changes the extent of money illusion, as measured by revealed choices. Thus, the evidence suggests little transfer of learning.

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Keywords: Money Illusion, Nominal versus Real Changes, Mental Accounting, Economics Education, Transfer of Learning

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1 Introduction

“Money Illusion” refers to people’s tendency to think in terms of nominal rather than real monetary values. It could account for the short-run nonneutrality of money. However, an illusion implies a lack of rationality that appears inconsistent with equilibrium optimizing behavior. Thus, pure money illusion was generally dismissed in modern equilibrium models. Instead, other factors such as imperfect information (Lucas, 1972), staggering of contracts (Fischer, 1977; Taylor, 1979), menu cost (Mankiw, 1985), and near-rationality (Akerlof and Yellen, 1985) were proposed to explain the short-run nonneutrality of money.¹

However, Shafir, Diamond, and Tversky (1997) and Fehr and Tyran (2001) show that money illusion matters. Shafir et al. (1997) emphasize that the same scenario can often be represented in both real and nominal terms, and that money illusion results from an interaction between these representations. They propose that people may feel happier with a nominal improvement and act accordingly, even though people understand that they are no better off in real economic terms. On the other hand, Fehr and Tyran (2001) distinguish between direct and indirect effects of money illusion – direct effects result from individual optimization mistakes, whereas indirect effects arise because some agents expect that others are prone to money illusion and, as a result, behave differently. They show that although the direct effects of money illusion may be rather small, the indirect effects can be quite substantial and long lasting.

A natural question that remains is whether money illusion still matters after people receive some economics training. Economists generally assume that money illusion is an error that can be easily eradicated through education and learning. Shiller’s (1997) survey on why people dislike

¹Similarly, pure money illusion is generally not discussed in modern textbooks of macroeconomics.

inflation shows that there is a significant difference between the general public and the professional economists in how they view inflation when they were asked about prices and inflation explicitly, i.e., when prices and inflation were made salient in the survey.² On the other hand, psychological research suggests that ‘transfer of learning’ across situations is surprisingly weak.

In any case, the direct effect of money illusion can be more significant in reality than it appears in an experimental setting with stationary replication, such as in Fehr and Tyran (2001). By construction, stationary replication (especially with feedback), by focusing the attention of the participants on a single repetitive task, constrains repeated optimization mistakes.³ In reality, attention is also a scarce resource. Thus, it is unclear whether the extent of money illusion would still vary different between the economists and the public in scenarios where inflation and prices are not made salient. This paper attempts to fill these gaps.

Specifically, this paper asks two questions: first, does money illusion still matter after some economics education? Second, is the extent of money illusion independent of the amount of economics education? The answers to both questions are yes and yes, both statistically and quantitatively. Using economics and non-economics undergraduates as participants in various scenarios that involve purely nominal changes, this paper shows that fully anticipated nominal changes do affect real decisions. The students with considerable economics training still exhibit considerable money illusion. There is little evidence that the extent of money illusion, as measured by revealed choices, is different between economics and non-economics students. The extent of money illusion is quite stable and quite persistent.

²Although the reaction of the public is surprising, the response of the professional economists is not. Perhaps the most important lesson in macroeconomics teaches economics students that they *should not* worry about low to moderate inflation *per se* or they *should* fail their macroeconomics examination.

³Similarly, pre-game training session in the computation of payoff is also biased against finding a direct effect.

The evidence suggests that both direct and indirect effects of money illusion could be significant. The written comments that are gathered from the surveys suggest that money illusion may not be random errors. In one scenario, money illusion appears to be due to the systematic use of mental accounting. Specifically, when people are given a nominal increase, instead of pooling the nominal increase into a budget constraint and treating it as fungible, they tag the nominal increase for specific uses only. As a result, a nominal increase is not neutral. This finding and limited transfer of learning may explain why money illusion tends to persist when the nominal aspect is not made salient.

Akerlof and Yellen (1985) show that *a little* money illusion from *some* people is all it takes for some small (second order) deviations at the individual level to result in large (first order) fluctuations at the aggregate level. The evidence suggests that even with economics education, some people continue to exhibit money illusion. Thus, without contesting the potential relevance of other explanations, money illusion is likely to be among the important factors that contribute to the short-run nonneutrality of money, since that involves aggregating over many agents with different cognitive ability and experience, and over many diverse situations where money illusion may matter. Based on the evidence presented, it seems unlikely that *everybody* would get *every* situation *exactly* right.

In what follows, Section 2 discusses the surveys and presents the results. Section 3 concludes.

2 Methodology and Results

The Methodology

This paper surveys undergraduates at the National University of Singapore (NUS) for their reactions to scenarios that involve purely nominal changes. The students fall into two main categories. The first category, which I label “economics,” includes students with considerable economics training. These students tend to be economics major. At the time of the survey, they have all completed a principles of economics course at the level of John Taylor’s *Economics*.⁴ Generally, they have also taken an introductory macroeconomics course at the level of Abel and Bernanke’s or Mankiw’s *Macroeconomics*. Details of their economics background will be discussed under each scenario.

The second category, which I call “non-economics,” consists of students who have had very little training in economics. These students are non-economics majors who were taking a principles of economics course for general exposure.⁵ They tend to major in engineering, computer science, or other science subjects. At the time when they were surveyed, they have had four lectures on microeconomics at the level of John Taylor’s *Economics*, but absolutely no training in macroeconomics.⁶ The limited microeconomics training they have had is irrelevant for money illusion, which is a general equilibrium macroeconomic concept.⁷

To avoid cuing the students and to investigate transfer of learning across situations, the questions are not framed in economic jargon. Instead, I use scenarios that invoke a change of numeraire – a nominal change that is analogous to a change in nominal money supply. This approach is motivated by the view that money illusion can be thought of as a failure to incorporate the general

⁴Most of them also studied economics in high school. At the end of their high school program, they took the Singapore-Cambridge General Certificate of Education ‘Advanced’ (GCE ‘A’) Level Examination, which is essentially the university entrance examination.

⁵For this category, I include only students who did not study economics in high school. Thus, these students have no economics training prior to the principles of economics course.

⁶In fact, different professors would be teaching the part on macroeconomics later.

⁷Furthermore, the professors teaching the course confirmed that no distinction between nominal and real variables were discussed thus far.

equilibrium effect of a nominal change.⁸

The students were given a one-page questionnaire in class. They were told that we were interested in their personal reaction to the questions and that their responses were anonymous and so their best response was to answer truthfully. Each questionnaire contains one and only one of the following scenarios. In other words, the survey is between-subjects. The students were asked to make a choice. They were also asked to write down a brief explanation for their choice. Most of them did submit a written comment. These written comments provide insights to the reasoning that leads them to money illusion.

In what follows, the results are presented in contingency tables. Each cell in the table contains two numbers: the first number is the observed frequency; the second number in parentheses is the expected frequency, estimated under the null hypothesis that money illusion is independent of economics education.⁹

⁸In other words, economic agents mistake a nominal wage increase (due to an increase in nominal money supply) as a real increase because they fail to contemplate the general equilibrium nature of a nominal increase – the general price level must also increase proportionately.

⁹If the row categories are independent of the column categories, then the expected frequency of the cell in row i and column j can be estimated as $\hat{E}(n_{ij}) = \frac{n_{i.}n_{.j}}{n_{..}}$, where E denotes expectation, n_{ij} is the number of observations in row i and column j , $n_{i.} = \sum_{j=1} n_{ij}$ is total number of observations in row i , $n_{.j} = \sum_{i=1} n_{ij}$ is the total number of observations in column j , and $n_{..} = \sum_{i=1} \sum_{j=1} n_{ij}$ is the total number of observations.

Scenario 1

Because of fixed capacity constraint and the greatly expanded enrollment, a liberal arts college has announced the following close bid system to allocate its courses. Under the system, the college would give each student some bid points to bid for courses every semester. The students observe only their own bids, but not the bids posted by others. The capacity constraint of each course is public information. The highest bidders will fill the class until the capacity constraint is reached. All successful bidders are charged the minimum successful bid. Unused points can be carried forward to the next semesters until graduation. There are no compulsory/core courses in this college.

Currently, the college gives each student 1000 bid points. Some students have become unhappy for not getting the classes they wanted. As a result, the college is thinking about giving every student an additional 500 points and is putting this proposal to a vote. If you were a student at this college, which way would you vote?

Contingency Table				
Choice	Economics ^a	Economics ^b	Non-Economics	Total
1000 bid points	32 (30.2)	13 (15.3)	25 (24.6)	70
1500 bid points	43 (40.5)	20 (20.5)	31 (33.0)	94
No preference	81 (85.3)	46 (43.2)	71 (69.5)	198
Total	156	79	127	362

Notes: The observed frequency is followed by the estimated expected frequency (in parentheses).

^a Principles of Economics & Introductory Macroeconomics.

^b Principles of Economics, Introductory Microeconomics & Intermediate Microeconomics

Results and Analysis

Because the capacity constraint is fixed, success depends on relative, not absolute, bids. Thus, the proposed change is nominal, not real. If students are illusion free, then they should have no preference over the number of bid points.¹⁰

¹⁰However, upon examining their written comments, it becomes clear that some students who voted for the status quo are in fact free from money illusion.

It is worth emphasizing that this bidding system is similar to the one actually used by the students to bid for courses. Because the system is very similar to the one that the students actually use, the scenario created by the question is not artificial or abstract.¹¹

Does money illusion still matter after some economics education? There are two groups of economics students. The first group consists of 156 students who were attending the last lecture of an introductory macroeconomics class.¹² Of the 156 students, $(43/156 \times 100\% =)$ 27.6% chose more bid points. The second group consists of 79 students who were attending the last lecture of an intermediate microeconomics class.¹³ Of the 79 students, $(20/79 \times 100\% =)$ 25.3% voted for the nominal increase. The fraction of students showing signs of money illusion is surprisingly large, given their economics background and their experience with a similar bidding system.

Is money illusion independent of the amount of economics education? Of the 127 students with little economics background, a similar $(31/127 \times 100\% =)$ 24.4% also preferred to have more bid points. Thus, there appears to be no relationship between money illusion and economics education. This is also reflected by how close observed and expected frequencies are in the contingency table above. To formally test for independence, I calculate the χ^2 -statistic $= \sum_{i=1}^3 \sum_{j=1}^3 \frac{[(n_{ij} - \hat{E}(n_{ij}))]^2}{\hat{E}(n_{ij})}$, where n_{ij} is the observed frequency and $\hat{E}(n_{ij})$ the expected frequency in row i column j , estimated under the null hypothesis of independence between rows and columns. This test of independence can also be thought of as a test of equality of the conditional probabilities of money illusion given little or considerable economics education. The χ^2 -statistic is 1.18. Asymptotically,

¹¹For more information on the actual bidding system that is used in NUS, please see <http://www.cors.nus.edu.sg/>

¹²The prerequisite for this course is a principles of economics course at the level of John Taylor's *Economics*. The course is at the level of Andrew B. Abel and Ben S. Bernanke's *Macroeconomics*.

¹³The prerequisite for this course is a principles of economics course at the level of John Taylor's *Economics* and an introductory microeconomic course at the level of Robert S. Pindyck and Daniel L. Rubinfeld's *Microeconomics*. This course is at the level of Hal Varian's *Intermediate Microeconomics*. It is likely that the students have also taken an introductory macroeconomic class at the level of Andrew B. Abel and Ben S. Bernanke's *Macroeconomics*.

it has a χ^2 distribution with 4 degrees of freedom. The test statistic has a p -value of 0.88. Thus, we cannot reject the null hypothesis that money illusion is independent of economics education. In other words, there is little evidence that the extent of money illusion is significantly different between undergraduates with different amount of economics education.

Next, to investigate the mental frames that lead people to money illusion, I examine their written comments in details. Based on these written comments, Table 1 provides a frequency distribution of the motivations behind subjects' choices.¹⁴

Table 1 reveals that there is some stability in the broad pattern of the most important mental frames that drive money illusion. For the two groups of economics students, $(41/156 \times 100\% =)$ 26.3% and $(30/79 \times 100\% =)$ 38.0% provide some evidence of money illusion in their written comments respectively. So do $(31/127 \times 100\% =)$ 24.4% of the non-economics students. What drives money illusion turns out to be various forms of mental accounting. Thaler (1999) defines mental accounting as the set of cognitive operations used by individuals and households to organize, evaluate, and keep track of financial activities. Mental accounting violates the economic notion of fungibility – money in one mental account is not a perfect substitute for money in another account. Hence it matters.

Specifically, some students appear to label the 'original' 1000 points and the 'additional' 500 points and keep them in separate mental accounts. They also appear to label the uses of bid points according to whether they are bidding for a popular class. They then behave as if they are using the following mental accounting rule: use the initial bid-point allocation as the reference, then adjust the bids by using the 'additional' 500 points to bid for the most popular classes. In other

¹⁴For the published version, the written comments are available upon request from the author. For this manuscript, see Appendix Tables A1(i), A1(ii), and B1 for the actual written comments that are classified under each category.

words, they behave as if the ‘original’ and the ‘additional’ bid points are non-fungible. They do not realize that a nominal increase does not really expand their choice set or give them more flexibility in their bidding: any relative point allocation they would like to choose after the bid-point increase was in fact available to them before the increase. Their written comments reveal that with the nominal increase, they would in fact increase the *relative* bids for their most preferred courses.¹⁵ These students account for $(21/156 \times 100\% =)$ 13.5%, $(9/79 \times 100\% =)$ 11.4% and $(18/127 \times 100\% =)$ 14.2% of the total respectively.

Second, based on their experience with a similar bidding system at the university, some students argue that they do not have enough bid points and so they need more. Others argue that they already have enough and so they do not need more. These two groups account for 3.8%, 11.4%, and 6.3% of the total respectively. They fail to realize that an across-the-board increase in the number of bid points does not really change their real bidding power.

Moreover, there are some students who think that their chances of getting the classes they want are simply higher with more bid points. The remaining comments are more sporadic. Some argue that a nominal increase allows them to increase their savings for bidding next semester. A few think that a bid-point increase may cause irrational exuberance and result in overbidding. Finally, some simply do not care about their classes and hence the number of bid points.¹⁶ All these cases involve some form of money illusion, explicitly or implicitly.

Finally, it is worth noting that among students who are illusion free, i.e., those who realize that an across-the-board bid-point increase has no real effect on bidding outcomes, only a few prefer

¹⁵Of course, from the perspective of classical economics, this would imply that these students were not optimizing in the first place.

¹⁶Jack Knetsch pointed out that some students may vote in favor of the status quo because they think that a nominal increase would devalue any points they have saved for use in future semesters. This is certainly a possibility that cannot be ruled out a priori. Nevertheless, nobody mentioned this in the written comments.

the nominal increase because they simply feel happier with more points. This evidence suggests that a pure preference for nominal quantities is not an important determinant of choices among students who are in fact illusion free.

Scenario 2

Two leading internet companies are trying to attract more internet users to list their online auction (both buy and sell) on their websites. They are close competitors.

To attract more users, both companies decide to reward their users with bid points for transactions conducted through their websites. These points can be accumulated and used to bid for attractive prizes offered periodically on their websites. Because prizes are limited in quantity, only the highest bidders get the prize, paid for using their bid points. The prizes offered by both companies are similar.

Company A gives its users only one bid point for every dollar's worth of transaction conducted through its website. In contrast, company B gives its users two bid points for every dollar's worth of transaction conducted through its website.

Which company will be more successful in attracting more users?

Contingency Table			
Choice	Economics ^a	Non-Economics	Total
Company A	3 (2.7)	3 (3.3)	6
Company B	48 (49.4)	60 (58.6)	108
The same	45 (43.9)	51 (52.1)	96
Total	96	114	210

Notes: The observed frequency is followed by the estimated expected frequency (in parentheses).

^a Principles of Economics & Introductory Macroeconomics.

Results and Analysis

Company B gives two, instead of one, bid points for every dollar's worth of transaction. Holding other things constant, doubling the number of bid points does not change the probability of

winning a bid. If the students are illusion free, then they should have no preference over the number of bid points per dollar's transaction.

The results show that out of 96 economics students, $(48/96 \times 100\% =)$ 50% chose company B's website, which offers more bid points per dollar transaction.¹⁷ Similarly, out of 114 non-economics students, $(60/114 \times 100\% =)$ 52.6% also chose company B. Very few chose company A. The rest were indifferent. Again, the lack of relationship between money illusion and economics education is reflected by how close observed and expected frequencies are in the contingency table.

To test the null hypothesis that store choice is independent of economics education, I again calculate the χ^2 -statistic, which turns out to be 0.18. In large sample, it has an approximate χ^2 distribution with 2 degrees of freedom. The statistic has a p -value of 0.91. So the null hypothesis cannot be rejected at the conventional significance level. However, χ^2 distribution may not be a good approximation here because the expected frequencies are less than five in the first row.¹⁸ Ignoring the first row, the χ^2 -statistic can be recalculated based on the resulting 2×2 table:

Contingency Table			
Choice	Economics ^a	Non-Economics	Total
Company B	48 (49.2)	60 (58.8)	108
The same	45 (43.8)	51 (52.2)	96
Total	93	111	204

Notes: The observed frequency is followed by the estimated expected frequency (in parentheses).

^a Principles of Economics & Introductory Macroeconomics.

¹⁷The sample is undergraduates taking a macroeconomic class at the level of Andrew Abel and Ben Bernanke's (2001) or Mankiw's (2003) *Macroeconomics* at NUS. The prerequisite is a principles of economics course at the level of John Taylor's *Economics*. The survey was conducted at the end of the semester. So the students had been exposed to the analysis of money neutrality.

¹⁸The rule of thumb for this approximation to work well is that the expected counts should be greater than five in all cells of the contingency table. See Rice (1995), p.487.

This calculation gives a χ^2 -statistic of 0.11, which has a p -value of 0.74 (under the χ^2 null distribution with 1 degree of freedom). Again, to the extent that web listing choice reflects money illusion, there is little evidence that the extent of money illusion changes with economics education. The incidence of money illusion, as measured by how it affects real choices, seems observationally indistinguishable among economics and non-economics students.

Next, I examine their written explanations in details. Table 2 summarizes the channels through which money illusion affects people's choices.¹⁹ Based on their written comments, 33.3% of economics students are illusion free – they know that having more bid points *per se* does not change the probability of a successful bid. So do 34.2% of non-economics students.

There are 53.1% of economics and 50% of non-economics students who show some signs of money illusion in their written comments. A few robust channels can be identified. First, the direct effect of money illusion plagues 14.6% and 28.9% of economics and non-economics students respectively. These students think that having more bid points per dollar spent increases their chance of bidding successfully. Second, the indirect effect affects 22.9% and 13.2% of economics and non-economics students respectively. These students realize that the number of bid points per dollar has no effect on their chance of bidding successfully, but they believe that others are susceptible to money illusion. There are also six to seven comments in each group that show some signs of money illusion, but it is ambiguous whether the effect is direct or indirect.

The remaining comments are more sporadic. A few prefer company A because they prefer lower bids. A few have no preference over the number of bid points because they do not care about bidding for a number of reasons. For example, some feel that the probability of winning a bid is

¹⁹For the published version, the written comments are available upon request from the author. For this manuscript, see Appendix Tables A2 and B2 for the written comments.

too small to matter.²⁰ All these cases involve some form of money illusion, either explicitly or implicitly.

Scenario 3

There are two rival supermarkets A and B in a neighborhood. The stores are similar in every aspect - prices, size of the store, range of goods sold, services - and they are located near each other.

Both stores decide to hold lucky draws to attract more customers. The conditions governing the lucky draws in both stores are otherwise the same: when sales in the store reach \$100,000, 20 lucky winners will be randomly selected from the tickets issued and each winner will get a shopping voucher worth \$100.

Both stores initially announce that for every \$10 spent in their store, the customers will be given one ticket to their respective lucky draws. Store B announces a week later that it will give two tickets instead for every \$10 spent. For fear of driving store B into cut-throat competition, store A decides to stick to its initial plan.

Which store will attract more customers in the end?

Contingency Table			
Choice	Economics ^a	Non-Economics	Total
Store A	11 (13.6)	20 (17.4)	31
Store B	48 (48.8)	63 (63.2)	111
The same	46 (42.6)	51 (54.4)	97
Total	105	134	239

Notes: The observed frequency is followed by the estimated expected frequency (in parentheses).

^a Principles of Economics & Introductory Macroeconomics.

²⁰This may have been called “rational” ignorance, except that the increase in bid points is purely nominal.

Results and Analysis

Stores A and B are similar in every aspect. The only difference is that after the first week, store B gives two, instead of one, lucky draw tickets for every \$10 spent. However, the probability of winning the shopping voucher is roughly the same in both stores at any point in time.²¹

The results show that out of 105 economics students, 10.5% chose store A, 45.7% chose store B, and 43.8% were indifferent.²² Similarly, out of 134 non-economics students, 14.9% chose store A, 47% chose store B, and 38.1% were indifferent. Again, the contingency table shows similar observed and expected frequencies. A formal test of independence gives a χ^2 -statistic of 1.38, which has an approximate χ^2 distribution with 2 degrees of freedom in large sample. The test statistic has a p -value of 0.50. Again, to the extent that store choice captures money illusion, there is little evidence that economics education changes the incidence of money illusion. The revealed choices of economics students seem observationally indistinguishable to those of non-economics students.

Turning to the written explanations, Table 3 again provides a frequency distribution of the reasoning that leads to money illusion.²³ Based on their written comments, 17.1% of economics and 26.1% of non-economics students are unambiguously free from money illusion. Again, a

²¹If there is exactly one prize in each store, then the probability of winning the prize is exactly the same in both stores. When there are twenty prizes, then the probability may differ slightly. To see this, consider a consumer who plans to spend $\$x$, where $x \in [10n, 10(n+1))$. If he spends it in store A, he would get n tickets, out of a total of about 10,000 tickets. The probability of winning one prize is roughly $\frac{{}_n C_1 \times (10,000 - n C_{19})}{10,000 C_{20}}$. Similarly, the probability of winning two prizes is roughly $\frac{{}_n C_2 \times (10,000 - n C_{18})}{10,000 C_{20}}$, and so on. If he spends it in store B, he would get $2n$ tickets, out of a total of about 20,000 tickets. The probability of winning one prize is roughly $\frac{{}_{2n} C_1 \times (20,000 - 2n C_{19})}{20,000 C_{20}}$. Similarly, the probability of winning two prizes is roughly $\frac{{}_{2n} C_2 \times (20,000 - 2n C_{18})}{20,000 C_{20}}$, and so on.

²²The sample is undergraduates taking a macroeconomic class at the level of Andrew Abel and Ben Bernanke's (2001) or Mankiw's (2003) *Macroeconomics* at NUS. The survey was conducted at the end of the semester. So the students had been exposed to the analysis of money neutrality.

²³For the published version, the written comments are available upon request from the author. For this manuscript, see Appendix Tables A3 and B3 for the written comments.

few robust channels of money illusion emerge from the written comments. First, the direct effect plagues 28.6% of economics and 27.6% of non-economics students respectively. These students think that getting more lucky draw tickets per \$10 purchase increases the probability of winning. Second, the indirect effect affects 21.9% of economics and 17.2% of non-economics students respectively. These students realize that the absolute number of lucky draw tickets has no effect on the probability of winning, but they also believe that others may be susceptible to money illusion.

The remaining comments are more sporadic. Some argue that getting more lucky draw tickets per \$10 purchase actually lowers (or ‘dilutes’) their probability of winning. Some have no preference over the number of lucky draw tickets for a number of reasons – some think that the probability of winning is still too small even with two tickets per \$10 purchase; others decide to stick to their original store of choice out of loyalty or other considerations. A few argue that although getting an additional ticket is appealing, shoppers will shun store B because the store loses goodwill by deviating from its initial announcement. In all of these cases, the students fail to realize that the absolute number of lucky draw tickets has no effect on the probability of winning the lucky draw.

3 Conclusions

To investigate whether money illusion is empirically relevant, this paper surveys economics and non-economics students using scenarios that involve purely nominal changes. In these scenarios, money illusion reveals itself as a failure (directly or indirectly) to fully incorporate the general equilibrium effect of a nominal change. Based on both revealed choices and written explanations for these choices, the paper finds quantitatively and statistically significant money illusion among

both economics and non-economics students. Thus, money illusion matters and it still matters after some formal economics education.

Is money illusion independent of formal economics education? Based on revealed choices, there is little evidence that the incidence of money illusion varies with the economics background of the participants. Because the surveys are between-subjects, they are independent. Thus, the results from the three scenarios can be pooled by adding up the separate χ^2 -statistics and their degrees of freedom. This yields a pooled χ^2 -statistics of $(1.18+0.11+1.38=) 2.67$, with $(4+1+2=) 7$ degrees of freedom. The associated p -value is 0.91. Thus, to the extent that we care about how money illusion affects real choices, the evidence suggests that economics training makes little difference.

The evidence suggests that the transfer of learning is very limited: Some students do not seem to be able to generalize the economics lessons they learn from one situation to another, when the nominal aspect is not made salient. This finding suggests that using the behavior of participants at the end of stationary replications in an experimental setting may lead to a conclusion that is too optimistic about the validity of money neutrality. Money illusion is likely to be more persistent than economists commonly assume.

What is the reasoning that leads to money illusion? In the first scenario, the written comments suggest that mental accounting may be an important mental frame that causes deviation from money neutrality. Deviations from money neutrality may not be random. Some people appear to label both the sources and uses of funds – they keep a nominal increase in a separate mental account and reserve it for specific uses. Thus, funds that are kept in different mental accounts are nonfungible. As a result, a nominal change is not neutral. What are the main channels through

which money illusion works? In the second and third scenarios, the written comments reveal that both direct and indirect effects of money illusion are quite large and significant among both economics and non-economics students.

References

- [1] Abel, Andrew, and Ben Bernanke, *Macroeconomics*, 4th Edition, 2001, Addison-Wesley.
- [2] Akerlof, George, and Janet Yellen, “A Near Rational Model of the Business Cycle, with Wage and Price Inertia,” *Quarterly Journal of Economics*, September 1985, 100(5), 823-838.
- [3] Fehr, Ernst, and Jean-Robert Tyran, “Does Money Illusion Matter?” *American Economic Review*, December 2001, 91(5), 1239-1262.
- [4] Fischer, Stanley, “Long-Term Contracts, Rational Expectations, and the Optimal Money Supply Rule,” *Journal of Political Economy*, February 1977, 85(1), 191-205.
- [5] Lucas, Robert E., Jr, “Expectations and the Neutrality of Money,” *Journal of Economic Theory*, April 1972, 4(2), 103-124.
- [6] Mankiw, N. Gregory, “Small Menu Costs and Large Business Cycles: A Macroeconomic Model,” *Quarterly Journal of Economics*, May 1985, 10(2), 529-538.
- [7] Mankiw, N. Gregory, *Macroeconomics*, 5th Edition, 2003, Worth Publishers.
- [8] Pindyck, Robert S., and Daniel L. Rubinfeld, *Microeconomics*, 5th edition, 2000, Prentice Hall.

- [9] Rice, John A., *Mathematical Statistics and Data Analysis*, 2nd Edition, 1995, California: Duxbury Press.
- [10] Shafir, Eldar, Peter Diamond, and Amos Tversky, “Money Illusion,” *Quarterly Journal of Economics*, May 1997, 112(2), 341–374.
- [11] Shiller, Robert, “Why Do People Dislike Inflation?” in *Reducing inflation: Motivation and Strategy*, edited by Christina D. Romer and David H. Romer, Chicago: University of Chicago Press, 1997. Studies in Business Cycles : No. 30.
- [12] Taylor, John, “Staggered Wage Setting in a Macro Model,” *American Economic Review*, May 1979 (Papers and Proceedings), 69(2), 108–113.
- [13] Taylor, John, *Economics*, 4th Edition, 2004, Houghton Mifflin.
- [14] Thaler, Richard, “Mental Accounting Matters,” *Journal of Behavioral Decision Making*, 1999, 12(3), 183–206.
- [15] Varian, Hal, *Intermediate Microeconomics*, 6th Edition, 2003, W. W. Norton.

Table 1: Bid-Point Choice Based on Written Explanations

Theory and Brief Description of Explanations	Econ ^a	Econ ^b	Non-Econ
<u>i. No Money Illusion</u> The number of bid points per student has no effect on class allocation.	93	37	88
<u>ii. No Money Illusion But Prefers the Increase</u> The number of bid points has no real effect but feels happier with more points.	3	1	0
<u>iii. Money Illusion</u>	41	30	31
<u>A. Naive Money Illusion – More are Better. Better Chance</u> More points are better. The probability of success is higher.	7	2	4
<u>B. Mental Accounting I – Better Point Allocation</u> The additional points allow the student to increase his bids for selected classes.	21	9	18
<u>C. Mental Accounting II – More Savings</u> More unused points can be saved for the future semesters.	1	3	0
<u>D. Mental Accounting III – Bidding Constraint</u> Need the additional points to relax the bidding constraint.	3	5	5
<u>E. Mental Accounting IV – Not Bidding Constraint</u> Do not need the additional points because the bidding constraint is not binding.	3	4	3
<u>F. Mental Accounting V – Irrational Exuberance</u> Having more points encourages overbidding.	2	2	1
<u>G. Do Not Care</u> Do not care about classes and hence the number of bid points.	4	5	0
<u>iv. No Written Comments</u>	5	8	6
<u>v. Uninformative Comments</u>	19	3	2
Total	156	79	127

Notes: See Appendix Tables A1(i), A1(ii), and B1 for the written comments.

^a Principles of Economics & Introductory Macroeconomics.

^b Principles of Economics & Intermediate Microeconomics (possibly Introductory or Intermediate Macroeconomics also).

Table 2: Web Listing Choice Based on Written Explanations

Theory and Brief Description of Explanations	Econ	Non-Econ
<u>i. No Money Illusion</u> Having more bid points per transaction dollar does not affect the chance of a successful bid.	32	39
<u>ii. Money Illusion</u>	51	57
<u>A. Direct Effect – Better Chance</u> Having more bid points per transaction dollar increases the chance of a successful bid.	14	33
<u>B. Indirect Effect – Others May Be Susceptible</u> The student is personally free from money illusion but believes that others are susceptible.	22	15
<u>C. Direct or Indirect Effect</u> Giving more bid points per transaction dollar attracts more users (directly or indirectly).	7	6
<u>D. People Prefer A Lower General Price Level</u> People simply prefer a lower bid price / general price level.	3	1
<u>E. Do Not Care About Bidding</u> Do not care about the number of bid points because the probability of winning is small, etc.	5	2
<u>iii. No Written Comments</u>	3	18
<u>iv. Uninformative Comments</u>	10	0
Total	96	114

Notes: See Appendix Tables A2 and B2 for the written comments.

Table 3: Store Choice Based on Written Explanations

Theory and Brief Description of Explanations	Econ	Non-Econ
<u>i. No Money Illusion</u> Getting more lucky draw tickets per \$10 purchase does not affect the probability of winning.	18	35
<u>ii. Money Illusion</u>	76	80
<u>A. Direct Effect I – Better Chance</u> Getting more lucky draw tickets per \$10 purchase increases the probability of winning.	30	37
<u>B. Direct Effect II – Worse Chance</u> Getting more lucky draw tickets per \$10 purchase lowers the probability of winning.	3	15
<u>C. Direct Effect III – The Loss of Goodwill</u> The store that loses goodwill will be shunned even if its deal appears more attractive.	5	0
<u>D. Direct Effect IV – Do Not Care About Lucky Draw</u> Do not care about lucky draw because the probability of winning is very small.	15	5
<u>E. Indirect Effect – Others May Be Susceptible</u> The student is personally free from money illusion but believes that others are susceptible.	23	23
<u>iii. No Written Comments</u>	3	15
<u>iv. Uninformative Comments</u>	8	4
Total	105	134

Notes: See Appendix Tables A3 and B3 for the written comments.

Appendix (Available Upon Request from the Author)

Appendix A: Written Comments of Economics Students

These are actual written comments by the students. The written comments are grouped under different categories. Each category starts with a heading and a brief description. The number of comments that fall under each category is denoted by N. At the end of each written comment in the square brackets is the actual choice of the respondent. I have left out comments that are uninformative.

Background: Principles of Economics & Introductory Macroeconomics

Appendix Table A1(i): The Written Explanations for Bid-Point Choice

i. No Money Illusion (N=93)

The number of bid points per student has no effect on class allocation.

1. Raising the bid points would mean that everyone has the same total points. The end result is still the same. [1000 points]
2. It does not matter since everyone will have same points and a change in system requires adjustment which imposed adjustment costs. [1000 points]
3. There is no difference between getting more points, as others will increase their bid too. [1000 points]
4. Every student is given additional 500. It doesn't really make any one better off than the other. [1000 points]
5. Since everyone is getting 1000 points, it doesn't make a difference that everyone get 1500 points. [1000 points]
6. If everyone has an equal number of points, (1000 or 1500), then it makes no difference in the bidding process. [1000 points]
7. By increasing the bid points for every student, there will be an increase in the supply of bid points. Hence the price of bidding the modules will be higher. So by giving more bid points, there are no effect on the real variable such as the possible [possibility] of getting the modules. [1000 points]
8. If the college gives everyone more points, the bidding will only go higher and the outcome will still be the same. [1000 points]
9. Giving 1500 points for everybody only mean higher bids for the various modules, which will not make unhappy students better off. [1000 points]
10. It makes no difference if the college gives more point to students because they are bidding among each other. [1000 points]
11. Everyone has the same amount of increase =, no obvious increase. [1000 points]
12. Additional points given to students mean more for them to spend on the modules they want to bid. Makes no difference ultimately. [1000 points]

13. Since everybody will get the additional 500 points (more chance to bid for everybody too), then no difference with maintaining 1000 bid points. [1000 points]
14. So if they increase the points, everyone will increase their bids, not just those who won't be able to get the classes. So in a way, it would be like a proportionate increase and would not make a difference. [1000 points]
15. The rise of 500 points is across the board. [1000 points]
16. If everybody got 500 points more, the people who bid a large amount of points on a particular course under the earlier circumstances would presumably increase their bid points across the courses proportionally because essentially the bid points reflect priority of preference so it would not make much of a difference. [1000 points]
17. I don't think increasing the bids by 500 point would make a difference since everyone else will also be getting the 500 points. Essentially it is a move to simply appease the students without having much effect. [1000 points]
18. If given 1500 points each, it will eventually result in the same outcome. People who bidded 300 points on a course will now increase their points to 800. Hence, the ranking will ultimately be the same. [1000 points]
19. Everyone has the same number of points given to them. So it would not make a difference. Really popular modules will require more than 1000+ points so an additional 500 points (everyone has it too) won't make a significant difference. [1000 points]
20. With 500 extra, students won't be better off than with 1000 so actually my answer should be no preference... But I'll just choose 1000 bid points. [1000 points]
21. By giving every student extra 500 points, the bidding points will also be higher. Hence it did not make much difference. [1000 points]
22. If everyone has the same amount of bid points (or cash) to get classes (or buy resources) it doesn't matter if it's 1000 or 1500. [No preference]
23. If every student gets the additional 500 points, then all students will increase their bidding points for the modules they desired. Then, as a result, these who didn't get the module will still not be able to get the module eventually. Therefore, I think I'm indifferent with any bidding points as long as the bidding system gives every student the same bidding points at first. [No preference]
24. With more bid points, students will bid with higher bid points. Just like the real values, there is actually no different. [No preference]
25. Giving 500 points across the board would still equalize the chances of those students who could get their courses or those who do not, thus an increase in points would not bring about any difference. [No preference]
26. Whether or not the bid points given has increased, there will still be students who get outbid for his desired modules. [No preference]
27. The relative amount of bid points you have compared with your friends are still the same, assuming we are taking and want to take the same modules together.
If we are unable to get the modules we want because we have not enough points, we can still try to bid for it next semester or change to another module since there are no compulsory course. [No preference]
28. As no real effect since everyone will have the same additional 500 points... [No preference]

29. It would not have made much difference even if the additional 500 points are given. [No preference]
30. It doesn't make a difference whether it is 1000 or 1500 points for the students. Even if it were a million points given, it would make no difference. Everybody would still remain equal except when considering, the numbers would be bigger only. [No preference]
31. Everyone gets the same number of points, whether or not there is an increase in no. of bid points given out. Dividing this "resource" (be it 1000 or 1500) by the no. of classes each student has to take, the bidding system would reach some sort of equilibrium. Giving more bid points will only result in a higher equilibrium. [No preference]
32. If the bid points for all students are increased, there is no real effect on the chances of getting the class they want. [No preference]
33. Even if everyone gets additional 500 points, there will still be students who will be unhappy for not getting the classes they wanted. It depends on the bids you put in order to get the preferred class. Since it does not reduce the amount of unhappiness, no point. [No preference]
34. It wouldn't matter, the economy is the same purchase power parity. [No preference]
35. Everybody works with the same amount of bid points so it's fair game. [No preference]
36. The same problem will occur no matter what level of bid points was given, only the range of successful bid points will be affected. [No preference]
37. Since everybody gets 500 points additional, it doesn't make a difference at all. [No preference]
38. Everyone will just increase their points proportionally if an additional 500 points is given. Thus the modules allocation results will be the same. [No preference]
39. The result will still be the same as everyone has higher number of bid points and more likely to place higher bids. [No preference]
40. If every student gets additional 500 points, every one will still not be better off. [No preference]
41. No difference, the amount of bidders remain the same. So the probability of getting into the class remains unchanged (assuming you bid in the same fashion). [No preference]
42. Either way, everyone would have the same number of points. [No preference]
43. Giving more bid points does not eliminate the constraint, therefore does not eliminate the problem. [No preference]
44. Coz [Because] everyone gets the extra bid points, I will not gain anything anyway since I do not have an advantage over my competitors (other students). [No preference]
45. By giving every student additional 500 points, it just means that everybody will have more points to bid. The minimum successful bid would maybe just be higher than with 1000 points. People might still not get the course they wanted. [No preference]
46. Doesn't matter - since everyone gets the same amount of points anyway. [No preference]
47. If everybody get higher bid points, they will just bid with the higher points so no difference is made. [No preference]
48. If the points are distributed to every student and the capacity of each course remains unchanged, then there is no

real effect on students among the same year. [No preference]

49. Most people will go for 1500 bid points, but then everyone has the same amount of points again so be back to square 1. So, we should follow the majority's decision. [No preference]

50. It doesn't make a difference as everybody will get the additional 500 points. It depends on how one uses up the points. [No preference]

51. Since every one get 1500 bid points, there won't be any difference from before. [No preference]

52. I am only here for one semester... NO EFFECT if everyone is given 500 more bid points. [No preference]

53. People who is likely to get the classes in the first place will just bid for more points. [No preference]

54. ↑ bid points will only raise the market 'price' of 'hot' modules. However, it allows better allocation for me if I want to bid for a popular module... though the rest have the same advantage too. [No preference]

55. Additional 500 points is given to every student, thus the level of bidding on the whole will become higher. With more points, students will bid higher and there will be no difference. [No preference]

56. Since the college is giving additional 500 points to everyone then no one is worse off or better off. Those who bid higher points previously will still do so with the additional points allocated, they will end up getting the slots still. [No preference]

57. Because if each student gets an additional 500 points, it has no effect in their chances of getting the classes they want. [No preference]

58. Because everyone is having higher points and there's no difference with the previous case. [No preference]

59. I think given the number of points be it 1000 or 1500 the outcome maybe the same, where there will be those who are outbided. [No preference]

60. Becos [Because] if you increase the bid points across the board, unlikely to make any difference in allocation of modules cos all the min bid points are just gonna increase. [No preference]

61. Since everyone has the same amount of points, the min bidding point would increase proportionately. [No preference]

62. The same people who would probably be the highest bidders would continue to ensure they get the modules and throw in more points to get the module and the end result will be the same. [No preference]

63. Coz since everyone are given 500 points extra, it does not make any difference. Furthermore, the total amount of points given also does not reflect what will happen – will everyone use all their points, or save up etc. [No preference]

64. Everyone has the increment if awarded. Makes no difference. [No preference]

65. If everyone has an additional 500 points, all will bid at a higher points, and the minimum successful bid will be higher. [No preference]

66. Every student will have the same number of points whether it is 1000 or 1500. Therefore, the bidding competition will be the same. [No preference]

67. This is because if every student will be getting the 500 additional points, everyone will be bidding for the maximum points given. I will rather save the points to bid for next semester. [No preference]

68. No difference. [No preference]

69. Everyone has the extra points → indifferent. [No preference]
70. Everyone had the extra.
 → general price also increases
 → should not respond
 → stay the same. [No preference]
71. Because no matter how many points I have allocated, I still will not know how much other people are bidding. Furthermore, everyone is allocated 1500 points. Thus it makes no difference to me. [No preference]
72. Since everyone would be given an additional 500 points, I do not have any increase in my relative points, therefore, I'm indifferent to this. [No preference]
73. Increase in "general price level," not my "price level." Doesn't mean I've the advantage. [No preference]
74. Having additional points doesn't make much of a difference since everyone else is getting the same increase. It may even worsen the situation. [No preference]
75. If everybody is getting the same increase in points, it actually means that everybody will be equally well-off. No student will have any advantage over the others. Hence if those students want to get the class they want, they should revise their expectations and bid according. [No preference]
76. In the end everyone has the same amount of points so no difference. [No preference]
77. If everyone gets exactly the same amount of bid points, I'm indifferent between 1000 and 1500 bid points. [No preference]
78. The addition of 500 points won't make any difference in my probability of getting a course that I want. With that additional point, of course I can place a higher bid, but all the other students can also do the same. [No preference]
79. No difference. Everyone gets the extra points. [No preference]
80. There is no difference in giving additional points. The ΔM_{points} will not have an impact. [No preference]
81. Adding 500 points will make no difference because it is across the board. This will put the students back into the same scenario as before. [No preference]
82. Everyone gets the increase in bid points, people just bid higher, even if I've more points, the bid is also increased, so makes no difference. [No preference]
83. Doesn't matter to me. The increase in point happens to everyone, and therefore, no one had any absolute advantage. [No preference]
84. The max bid point will be the same, if they have the same additional amount of point, it will have no real effect, if they anticipated the increase in the point. [No preference]
85. By giving an additional 500 bid points, it merely increases the bid of the highest bidders in absolute terms only. System remains the same. The same scenario will still happen when students do not get the class they wanted. [No preference]
86. Everybody gets the same increase of 500 points, so it does not really help you get the class you desire. [No preference]
87. The additional 500 points are given to every student. Consequently, there is no real increase in bargaining or

bidding power. [No preference]

88. If every student has additional 500, it does not change the level of competition for the course. Strategy is needed when bidding. [No preference]

89. Cos [Because] it is a closed bid system. So it does not really matter much if it is 1000 or 1500. [No preference]

90. Makes no difference. [No preference]

91. Giving everyone 1000 point is of no difference with giving everyone 1500 points. Because if the points an individual possess increase, the bid point for a specific module will increase naturally since every student has more points to spend now. [No preference]

92. Closed system and no one knows the bids posted by others. Increasing the point only increase the bidding points, doesn't solve the problem anyway. Either they (school) change it to an open system, or increase the allocation for each course (esp popular ones). [No preference]

93. No difference. Whatever the bid points given would be cancelled out when students bid for their modules. More bid points given would just increase the level of bidding but will not decrease the number of bidders since everyone is on level term, having the same amount of bid points at the beginning. [No preference]

ii. No Money Illusion But Simply Likes Having More Points (N=3)

1. Even though everyone has the same amount of points, I still sort of feel "richer" with 1500 points. [1500 points]

2. Anyway, I don't think an additional points would make much difference but it will make me feel better. [1500 points]

3. I prefer higher points even the situation continues. [1500 points]

iii. Money Illusion (Total N=41)

A. Naive Money Illusion – More are Better. Better Chance (N=7)

More points are better than less. With the additional points, the probability of success is higher.

1. More points to bid, higher chance to get a place. [1500 points]

2. More points, the better. [1500 points]

3. More points, more good. [1500 points]

4. Increasing the bid points could maximize the utility of those who want to get their classes but fail to get them. [1500 points]

5. This is the same as a Vickery auction and therefore, you should tell the truth as it is an optimal strategy. Of course, this is assuming that you value the course at 1500 points. [1500 points]

6. More bid points would mean more points to put for each module. More likely to get the modules that I wanted. [1500 points]

7. I would put in the maximum amount of points I have so that I'll have a higher chance of getting the class I want. Anyway, I will be able to get back the balance of points after getting the class. [1500 points]

B. Mental Accounting I – Better Point Allocation (N=21)

With the additional points, the student can increase his bids for the most desirable classes, while keeping the bids for the less desirable classes unchanged. The additional points allow a better points allocation.

1. More points, more choices. [1500 points]
2. Additional 500 points allow me to have a greater variation in allocating my bid points to my desired modules. [1500 points]
3. Depending on how I allocate my points versus other students' allocation of their points, the extra 500 bid points may become useful and help me to secure a place in at least one module I want. [1500 points]
4. So I will get flexibility. [1500 points]
5. Although everyone is increase [has an increase of] 500 points, it might seems [seem] no different [difference]. But with 500 point, there is more flexibility as the way people allocate points is different. [1500 points]
6. I can better allocate my preferences for certain module. [1500 points]
7. A higher amount of points will enable us to allocate more points in some other modules we want, we can allocate more points to the alternatives, and probably get the module that we couldn't get this semester, by next semester. [1500 points]
8. A wider amount of range of points can increase the differentiation level of preference. [1500 points]
9. Can better allocate my points to illustrate my preference between my various modules. [1500 points]
10. Well since there are more points to play around, even if it is the same for everyone, we can be more pin-point to the bid. [1500 points]
11. Some of the students may use the points in modules which are less popular. [1500 points]
12. Larger leeway to manipulate the points. Those who want the courses more badly now can put a higher big, those who can wait have higher bid points to manipulate in the future. [1500 points]
13. I can reallocate my points better. [1500 points]
14. Although popular courses will still remain expensive. (↑ bid points doesn't increase my chances of getting it cos [because] everyone else bids more), my chances of getting a less "hot" course is higher. [1500 points]
15. More options to allocate your points to certain module. [1500 points]
16. Every individual student can utilize the extra 500 points in the optimum way... [1500 points]
17. Bidding system allows students to express how much they value the courses hence place bids accordingly. With more points, more bids can be used to express how they value the courses. [1500 points]
18. So that I have more points and hence can place high points for the module that I want, increasing the chances of getting the module. [1500 points]
19. Because if I really am interested in the class, I am willing to sacrifice my bid points to get into the class. Besides, the unused points will be refunded. [1500 points]
20. More points to bid for the courses I want against others. [1500 points]
21. More bidding points will allow me to separate more points for each course. [1500 points]

C. Mental Accounting II – More Savings (N=1)

Even if the student fails to get their most desirable classes, with the additional points, he can save more for the future semesters.

1. If I'm not a successful bidder for the course I like, I would be able to save up the points and bid again next round. [1500 points]

D. Mental Accounting III – Bidding Constraint (N=3)

The student needs the additional points to relax his bidding constraint.

1. 1000 bid points is not enough as some of the modules are more popular than others and require a lot more points to bid for it. More bid points may allow the module to be bid successfully and not have to choose from the leftovers that one may have completely no interest in. [1500 points]
2. So as to allow me to throw in as many points as I like without worrying. [1500 points]
3. So that I have enough bid points to bid for the course I want. [1500 points]

E. Mental Accounting IV – Not Bidding Constraint (N=3)

The student does not need the additional points because his bidding constraint is not binding.

1. This is because it is very easy to get my modules, I don't need so many points. [1000 points]
2. Because I'd graduate after 1 more semester. Now I already have enough points for the next semester (my last semester). [No preference]
3. I have not met with this situation yet. [No preference]

F. Mental Accounting V – Irrational Exuberance (N=2)

Having more points encourages overbidding.

1. I feel that if everyone were given too many points, the result may be an inflation of the bid points in certain popular courses which is undesirable as they may not have enough points for future courses. By giving everyone the barest minimum, it'll help everyone to learn to plan for their future given their constraints. [1000 points]
2. By giving more bidding points, there will be a tougher competition. Therefore, the lesser the bidding points, the lesser competition the bidding will be. [1000 points]

G. Do Not Care (N=4)

The student does not care about classes and hence the number of bid points.

1. There is no point to put all your points for one or two modules you like. You can still take in the following semester and you still have to choose your other essential modules. [1000 points]
2. To fulfil the college requirements, I will have to take some specific modules sooner or later. If the module that I want is not allocated to me, I will just do another module since I have to take it one day anyway. If the left-over module clashes with my preferred timetable (e.g., it's a Friday class but I don't want to go school on Friday), then I

will just take another module. Something will fit in somehow or other. [No preference]

3. There's no compulsory courses so even if I do not get the course due to insufficient bid, I can bid for other courses.
[No preference]

4. It is still possible to obtain a module without going through the CORS [bidding system]. So, no big deal whether has more or less points. [No preference]

iv. No Written Comments (N=5)

Background: Principles of Economics & Intermediate Microeconomics (possibly Introductory and/or Intermediate Macroeconomics)

Appendix Table A1(ii): The Written Explanations for Bid-Point Choice

i. No Money Illusion (N=37)

The number of bid points per student has no effect on class allocation.

1. I think it wouldn't make a difference [difference], it's just akin to increasing the Ms [money supply]. People who would throw 1000 pts [points] into a bid would be just as likely to throw 1500 pts [points] into a bid. The best method is to increase vacancies & not bid pts [points]. [1000 points]
2. Because if everyone's bid points are increased by the same amt [amount], the minimum bid will also increase, so students may still not get the module they want after all. [1000 points]
3. The proportion of the students getting the course will still be the same. So it makes no difference if it is 1000 or 1500. [1000 points]
4. Giving additional 500 points does not solve the problem. Every one is still on an equal ground with the same allocation of points. It makes no difference. [1000 points]
5. If I value the course greatly I will definitely place all my bids on it to ensure that I have a higher chance of getting the module, provided I have no other modules to bid for. [1000 points]
6. If every one were given an increase of 500 points, so what's the change? Higher points for each module? The ratio will still be the same. If you have increase [increased] the bid, others might also do the same. [1000 points]
7. In order to get the classes that the students want, they should know how to allocate the points accordingly. There's no point in giving the students additional points if they don't know how to manage their points properly. [1000 points]
8. If everybody were given these additional points, the successful bid will be inflated in the same manner. Thus, it doesn't serve its purpose! [No preference]
9. It seems that giving every student an additional 500 points would just result in 'inflation' in the bidding. It's not of much help. [No preference]
10. Inflation. Increase in nominal money supply (points) that is expected by everyone. Basically, everyone is not better nor worse off, relatively. ∴ It doesn't make any difference. Just like the MAS [Monetary Authority of Singapore, the *de facto* central bank in Singapore] announcing to ↑s nominal money SS [supply] by 10%. Price will ∴ ↑s by 10% due to public expectations. We will just change our bids accordingly. :-) [No preference]
11. If everybody is going to get 500 bid points extra, it makes no difference as everybody has the same number of bid points to compete with. [No preference]
12. If every student have more bid points, the result will still be the same. [No preference]
13. This is a nominal increase in the bid points because everybody is getting 500 points more. Hence the probability of each student getting the module is the same as w/o [without] the additional 500 points. [No preference]
14. The probability of getting the classes are still the same. This is only a nominal increase, not a real increase. [No preference]

15. Given [Giving] everybody a [an] increase in bid point, it makes nobody better off. Hence no preference. [No preference]
16. The more points, the better for us. However, it does not make a difference as the bidding points are relative... [No preference]
17. Since everybody is getting that extra bid points, then it wouldn't make any difference. [No preference]
18. Would it make a difference if everybody had 1000 or 1500 pts [points]? If everybody gets the extra 500 pts [points], it would be inflation – real “bidding power” does not change. [No preference]
19. It would not be different anyway with additional 500 points since everyone else will also get 500 points. So even with point increase, the absolute price will still be the same. The increase in point will only cause price illusion. [No preference]
20. I believe there would be no difference as everyone is allocated the same amount of bid points. [No preference]
21. If the college were to give additional 500 points to every students, all students will be relatively well-off so no difference. [No preference]
22. Depends on the rank of my choice in that semester, if it is the one I want the most, I will put higher bids instead. [No preference]
23. You are assuming everyone in the college taking the course. It makes no different [difference] to whether point you increase as everyone will get the same point as other. If I vote 10 points now and which the increased 500 points, I will just increase my bid in porportional [proportion] to the increase in the points ratio. Increase the 500 points is just wasting the time and trying to be extra. [No preference]
24. Every student has 500 more points, then every one will also increase their bid, so there's no difference between 1000 - 1500. It's not as if one has more than another. [No preference]
25. Since everyone has the same number of points, it does not make a difference even if I am allocated more points or less. [No preference]
26. It would not make a difference to me since every one else would be allocated another 500 points. So the extra 500 points that I will get will not mean that I have a higher chance of getting the modules that [I] want. [No preference]
27. Either way, it boils down to how many points you allocate deemed to your status of priority. Even if you are given 1500 points, you'll still face same probs [problems] of lack of info [information] & competition. [No preference]
28. Anyone else will have the same bid pts [points]. [No preference]
29. It's the same for every student, whether they hv [have] 1000 or 1500 since relatively, they don't gain more. [No preference]
30. Results will be the same. [No preference]
31. ∴ will still be indifferent. [No preference]
32. Because if everyone is given additional 500 points, then everyone will be equal again. It will be better if only some (preferably myself included) get the 500 points. [No preference]
33. An extra 500 points would not make anyone better off since everyone would have an extra 500 points. [No preference]

34. If everyone else is given an additional 500 points, then it should not make a difference. “Bell curve” :-) [No preference]

35. My bid points will increase absolutely. However, it does not change relatively. [No preference]

36. Either with 1000 and 1500 bid pts [points], I am still able to get my modules. [No preference]

37. If everyone gets the same amount of point, there will be no effect as who gets the major module. This is essential module, not elective. I think bidding point for this module is “1” points. [No preference]

ii. No Money Illusion But Simply Likes Having More Points (N=1)

1. Having additional points, it may increase my chance of getting the module. But actually if everyone gets the same additional points, the payoff will be the same. It’s just the kind of mentality that lies in me that I prefer additional points.²⁴ [1500 points]

iii. Money Illusion (Total N=30)

A. Naive Money Illusion – More are Better. Better Chance (N=2)

More points are better than less. With the additional points, the probability of success is higher.

1. Higher probability of getting the modules I want. [1500 points]

2. Bidding at a higher bid point, a higher chance of getting the module. [1500 points]

B. Mental Accounting I – Better Point Allocation (N=9)

With the additional points, the student can increase his bids for the most desirable classes, while keeping the bids for the less desirable classes unchanged. The additional points allow a better points allocation.

1. Given the points, the original 1000 bid points will go into my original allocation for some particular modules, the bonus of 500 bid points will go into the most desired module. [1000 points]

2. More points allow better distribution of points and higher chances of getting courses. [1500 points]

3. Having more bid points allows us to use them by allocating much more bid points to the modules we really want to get in order to ensure that we get them, while keeping constant the bid points we allocate to other modules or increase them by a bit according to our preferences. [1500 points]

4. For some modules, the bid pts [points] is very high. These modules may be one of my preferred modules, I will need the extra pts [points] to bid for them. Having additional pts [points], it may increase my chance of getting the module. But actually if everyone gets the same additional pts [points], the payoff will be the same. It’s just the kind of mentality that lies in me that I prefer additional pts [points]. [1500 points]

5. It will give me more options on how to bid for the classes I want. I may decide, with 500 additional points, to increase my bid for some modules I value greater than the others, while others may decide to reduce their bids for the classes I want to take (they will also reallocate their pts accordingly). I stand the chance to outbid someone by a

²⁴He is the stereotypical agent proposed by Shafir, Diamond, and Tversky (1997) – he knows he is no better off in real terms, but he simply feels better off with a nominal increase.

margin. [1500 points]

6. There is more points to bid for the more 'hot' modules... [1500 points]

7. In a better position to bid for the classes I really wanted. [1500 points]

8. Higher points denote more points to each individual. Each individual has different preference for different courses each semester. Hence each individual might get his/her preferred choice.²⁵ [1500 points]

9. Allows for more freedom and eligibility for getting courses that are high in demand. [1500 points]

C. Mental Accounting II – More Savings (N=3)

Even if the student fails to get their most desirable classes, with the additional points, he can save more for the future semesters.

1. It's always better to have more pts [points] than less. And even though having more points might not successfully guarantee you getting the module, the points returned and unused can still be used for next semester bidding. [1500 points]

2. Because those risk averse students would have more pts [points] to bid [for] their modules. Others may keep their unused points & forward to next sem [semester] to bid for the mod [module] that they want badly (so they can dump all their saved pts [points] into it). [1500 points]

3. More bid points to bid next time. [1500 points]

D. Mental Accounting III – Bidding Constraint (N=5)

The student needs the additional points to relax his bidding constraint.

1. My programme acct [account] is now 0 pt [points]. (all used up to bid my mods [modules]). [1500 points]

2. A single economics module require about 300+ bid point which left me with no much points to bid for other modules. [1500 points]

3. Some of the classes is really more difficult to get. For example, principles of accounting, I've been trying to get that but in vain. [1500 points]

4. A number of modules were difficult to achieve as they require higher bid points. Some of these modules are in fact exposure modules that are crucial in helping the students' major. [1500 points]

5. 1000 points is not really sufficient. 500 points more will definitely be useful. [1500 points]

E. Mental Accounting IV – Not Bidding Constraint (N=4)

The student does not need the additional points because his bidding constraint is not binding.

1. Points are sufficient. [No preference]

2. I think 1000 points is already enough. [No preference]

3. I feel that it does not really affect me based on the experience I had during the bidding period this semester. I

²⁵These are original underlines by the student.

managed to get the modules I wanted. It's the tutorial slot that I couldn't get my best preference. [No preference]

4. Right now, I got my core modules using only 1 point each. The rest are for the breadths, etc. which I have got them using not much of the remaining points either. [No preference]

F. Mental Accounting V – Irrational Exuberance (N=2)

Having more points encourages overbidding.

1. More pts [points] would lead to large variance of points bidded [bid], this could lead to a large skew of points should a significant number of “bankers” choose a particular module. [1000 points]

2. 1500 bid pts [points] pose the temptation of overbidding in some modules that tend to inflate the “next minimum successful bid.” [1000 points]

G. Do Not Care (N=5)

The student does not care about classes and hence the number of bid points.

1. No pt [point] in bidding too high, if can't get the module, try next round. If put all the points in this module, I wouldn't have enough pt [point] for other modules. [1000 points]

2. I will bid for the lowest. [No preference]

3. I can always choose another course. [No preference]

4. I bo chiap [don't care]²⁶ No difference actually. [No preference]

5. Basically, I just don't like the bidding system. It doesn't make a difference whether the bidding points are increased. [No preference]

iv. No Written Comments (N=8)

²⁶A local slang.

Background: Principles of Economics & Introductory Macroeconomics

Appendix Table A2: The Written Explanations for Listing Choice

i. No Money Illusion (N=32)

The number of bid points per transaction dollar has no effect on who gets the prize.

1. Same logic as money supply being bid points. (1) extra bid points \uparrow Dd [Demand] \rightarrow \uparrow Price of item, i.e., perceived value of item. (2) where supply is constant. The \uparrow in value (price) of the item discourages some potential bidders eventually. Dd [Demand] falls back to Dd=SS level. Where supply is fixed. [SAME]
2. The scenario is exactly the same as Singapore dollars and Malaysia's dollars [Malaysian Ringgit]. It does not mean [mean] that Malaysia \$2 is definitely better than Singapore \$1 dollars. Because the exchange rate is different. Although the nominal bid point for company B is apparently more than A, but their value is the same. [SAME]
3. If the consumers are aware [aware] of the situation and smart, they'll know that though company B gives them 2 bid points/\$1, it also gave others the same point. So in the end, the bid'll be higher cos [because] pp [people] have more points. [SAME]
4. It's not different that how many bid point the company gave for each dollar's worth of transaction. [SAME]
5. Because your comparative point is the same with other customers within the community that chooses company A or B. If you think you get higher bid points if you choose company B, actually, other consumers also get 2 points for each dollars they spend. [SAME]
6. The diff [different] companies have different website, so the bidders will be 2 diff groups. What's the differences then? [SAME]
7. The bidding system is different between the 2. Since it is the highest bidder in each system and as the number of pts [points] for each bidder is equal in each system. There is no difference! The number of pts [points] of 2 bidders in the 2 companies has no relation. [SAME]
8. Highest amt [amount] spend on company A gets highest pts [points]. Same goes for company B. \therefore Its [it's] only the points system that is different and not related 2 [to] each other. [SAME]
9. Same lah. [SAME]
10. Since the number of prizes are limited & similar, doesn't matter whether it offers more points. [SAME]
11. Bid points of one company is worthless to the other company. It is not hard for users to see that their real 'wealth,' in terms of bid points, will be the same given that they spend the same amount real dollars in one website or the other. They should be indifferent to these 2 options. [SAME]
12. Erm... I think it has to do with the real variable being unchanged while the nominal variable \uparrow ... [SAME]
13. If company B is giving 2 times of company A, then I think the bid points for the prizes will be 2 times also. \therefore in the long run, both A & B will attract roughly the same number of users. [SAME]
14. The bidders in either A or B will relatively have the same chance to win prizes as they will be given the same points. [SAME]
15. They are different companies in different accumulation system. [SAME]

16. Because company A and company B is giving out prizes according to the bid points in their company, and not combining both together. [SAME]
17. This is because that for each company, it would still be the person who spend more in terms of real dollar got the highest chance of getting the points. [SAME]
18. Because both companies give prizes to highest bidder. Company B's bidders will have more points to bid and thus, bidding points are high. Company A's bid points are less thus their competition bidding points are lower. In conclusion, its [it's] the same. The one with more points you need more points to get the prize, vice versa. [SAME]
19. It makes no difference between A and B because the highest bidders get the prizes & there is no link between A and B. [SAME]
20. No matter how the point increases, the goods were limited. So the competitive situation doesn't change so much. [SAME]
21. The consumers will relatively enjoy the same among [amount] of bid pts [points] per dollar since this applies to all the consumers. Unless only a certain group of consumer is affected, then company B will be more attractive. [SAME]
22. Because prizes are awarded according to no. of points accumulated and within each company nothing to do with the diff [difference] in bid pts [points] given for every dollar's worth of transaction between companies. [SAME]
23. The bid pts [points] competed is separate b/w [between] both companies online auction. ∴ 2 bid pts [points] for every dollar's worth of transaction is only valid within its own company website, not counted in the other company auction. Thus just by a little thought, the strategy used in bidding pts [points] does not affect the other. [SAME]
24. Everyone using system of A or B gets the same pts [points] (in real variable). B is higher than A only in nominal terms => no net effect. => since users in A compete within A only, users in B compete within B only => same (user will be indifferent). [SAME]
25. As the highest bidders can get the prize only, and it is same opportunity for every user of that company. It would not attract more users. Moreover the bid points depend on every dollar's worth of transaction conducted. [SAME]
26. Effectively, the offers are the same!!! [SAME]
27. This is because all customers in company B will receive the same no. of bidding points per dollar. Hence all are able to bid competitively. [SAME]
28. For company B, 2 bid points is effectively equal to 1 bid points of company A... [SAME]
29. At first glance, I would think that B is more attractive. However, if we look more closely, only the "absolute" bid points are different but the "relative" bid points are still the same for both companies. [SAME]
30. Users of A & B have the same advantage when using either A or B. [SAME]
31. (1) You didn't indicate the prices. Though they're close competitors, prices may still differ. (2) I don't really like the idea of doing internet transaction. (3) Even if I do, I don't think I'll be so kiasu [afraid to lose out] to buy loads of stuff and accumulate pts [points] => won't be able to get any prizes then! [SAME]
32. ... Both companies may price their "prizes" differently. [SAME]

ii. Money Illusion (Total N=51)

A. Direct Effect – Better Chance (N=14)

Having more bid points per transaction dollar increases the chance of a successful bid.

1. Larger incentive and reward. [B]
2. Prize offered are the same and they are close competitors. Hence company B. Furthermore they are close competitors. [B]
3. Logically, consumers will choose a company which they can get more benefits out of it. [B]
4. Company B gives users more bid points and users can accumulate more bid points faster and get their prizes. [B]
5. Consumer gets more from company B when they transact for the same amount of money. [B]
6. Faster to accumulate points! => [B]
7. Rational choice Theory → maximising the dollar. [B]
8. Company B offers twice as much bid point for each dollar spent. Naturally, human nature is such that people will patronise the company that gives more benefit. [B]
9. People are ugly => greedy. [B]
10. Considering that for the same dollar spent, the no. of bid points you receive from company B is double. Moreover, this will also help users to higher bid points to get their wanted prizes, because since highest bidders get the prize, the double reward will help them to have better chances of getting it. [B]
11. People are usually attracted if they receive more. They have the mentality where more is better. Thus, by giving 2 bid points as compared to 1, of course people would choose company B to A as they get more benefit out of it. [B]
12. B gives 2 bid points for every dollar where as B [A] gives only 1 bid point for each dollar which means that you can earn more bidding points per dollar from B than A, so naturally people will be attracted to company B. [B]
13. Because B offers more bid pts [points] for every \$ worth of transactions and since these pts [points] can be used to exchange for prizes, the higher pts [points] the better. Therefore more pp [people] will be attracted to B. [B]
14. Its [It's] quite obvious you will choose a website that gives you more points. Even though, most pple [people] prob [probably] won't care since they have to bid very high to even have a glimmer of hope in getting a prize, some kiasu [afraid to lose] pple [people] will definitely be very gang-ho about it. So they will boost up company B's sale. [B]

B. Indirect Effect – Others May Be Susceptible (N=22)

The student is personally free from money illusion but believes that others are susceptible.

1. Consumers would feel that they are getting more for each dollar they transact at company B. Thus, B will attract more people. This is assuming most people are only of average intelligence and equate more bid points acquired with each dollar as more benefit to themselves. However, in reality, it is unlikely that people with company B would have a higher chance of getting a prize than people at company A. [B]
2. This is due to the customers perception that they are gaining more bid points for every dollar worth of transactions. Actually, the proportion of points given by A and B are similar, customers of company B will think they gain more points, yet in real terms all customers of company B will also get a similar increase in the points gained. This is similar to the misperceptions theory. [B]

3. To the layman, 2 bid points more attractive than one even though the outcome will be the same (equal chance of winning in the end). [B]
4. Although both companies effectively operates the system in the same way. They bid points are nominally different but identical in the real sense. However, users are (by analyzing them psychologically) will prefer one which give them “seemingly” higher bid points for each dollar spent. [B]
5. Because two points for every dollar’s worth will stimulate consumers to purchase because they feel they will get more if they purchase through B than A, though in fact they are the same. I think it is the psychology fact. [B]
6. A gives 1 pt [point], but B give 2 pt, more attractive to consumers. In LR [long run], consumer realised that 2 pt/dollar for everyone is the same as 1 pt/dollar for everyone. but they are unlikely to switch coys [companies] due to cost of listing. [B]
7. Company B utilizes psychological effects to achieve its goal. [B]
8. Company B offer more ‘nominal’ bidding points and thus make people feel ‘better off.’ It will, thus, attract more users. [B]
9. Actually, A & B are of the same for a customer to get the prize; but from the view of marketing, people maybe choose B for they can get more & thought to be valued more. [B]
10. B for SR [short run] but in LR [long run], both companies, they will realize they will end up with the same advantage. [B]
11. Psychichology [Psychology] Effect. Based on the nature of people, 2 pts [points] is better than 1. [B]
12. Company B might be more successful in offering a greater reward in terms of the bid pts [points] given, while company A appears to give lower. Hence becos [because] of misconception theory, B is more successful in attracting users. However, the users might have overlook [overlooked] the pt that prize bids are now higher. [B]
13. Assuming all else constant. (close competition → prices close). “ie [i.e.] attractiveness of web design, compatibility with search engines.” ~~2 bid pts [points] creates the illusion that~~ [B]
14. Although we know that the chances of someone successfully bidding for the prizes in A or B are the same, psychologically, a person would think that 2 points would mean a higher chance of securing the prizes. [B]
15. There is this nominal increase in bid pts [points] that encourage people to believe they have more. This perceived ‘more’ points will likely encourage ppl. [people] like the \$3.99 or \$3.95 item will garner a lot more interest than a \$4 item. [B]
16. Thus the net effect is the same, but pple [people] are generally attracted to a higher point system. [B]
17. Higher bid points given by company B will make the users feel better, although the results are the same, since the two situations are equally fair. [B]
18. Even though the outcome is the same at the end, the phrase ‘two bid points’ would have already caught users’ attention, as compared to ‘one bid point.’ Since two is greater than one, and ppl [people] tend to think that ‘more’ is better. [B]
19. People are more attracted by bid points though their relative weights are similar in both cases. [B]
20. The users give [are given] 1 more bid points than those in A. Numerically, the amount accumulated will be higher.

But I personally thinks that both company are equivalent. Because the prizes are limited it is only the number of transactions undertaken that makes the difference. [B]

21. Customers are likely to receive as many points as possible, they don't know that others also receive the same benefits. [B]

22. (long run) The users of each company will be relatively equal as one bid point in company A is worth the same as 2 bid points in company B. (short run) It is possible that B will attract more users in the short run because of the perception that more points are given. [SAME]

C. Direct or Indirect Effect (N=7)

Giving more bid points per transaction dollar attracts more users. However, it is ambiguous whether the student is personally free from money illusion.

1. The higher bid point will attract more users to B compared to A. [B]
2. In SR [short run], company B will definitely attract more users because of the two bid points. But then it really depends on the prizes offered. [B]
3. They are close competitors thus they will set the same price. [B]
4. Both are close competitors. Company B gives 1 bid points more for every dollar's worth of transaction conducted through its website. [B]
5. The prices of their goods would probably be about the same since they are close competitors. Under company B, the users get more bid-points & would feel richer (wealthier). They would feel that they can get more prizes/get prizes easier with more bid points. Hence more users would be attracted to company B. [B]
6. Because company B gives the users 2 bid pts [points] hence appears to be more attractive to the users than A. [B]
7. Generally B is what pple [people] will choose. [B]

D. People Prefer A Lower General Price Level (N=3)

Having more bid points per transaction dollar does not affect the winning bid but people simply prefer a lower bid price.

1. Actually, it doesn't matter how many points are given for each transaction. But giving more points per transaction gives people a sense of "inflation." So I think Company A shall be more successful (more trust worthy). [A]
2. The more bid pts [points] awarded to users in company B will just cause them to use more pts [points] to bid everytime. Thus if the users see that the successful bid points for each prize is so high, they would think that it is easier to get the prizes in company A. [A]
3. Although it's the same, it will seem "cheaper" to exchange for the good as lesser pts [less points are] needed. [A]

E. Do Not Care About Bidding (N=5)

The student does not care about the number of bid points because the probability of winning is very small, etc.

1. It's actually difficult to tell whether company A & B will attract more users only based on their reward points. Be-

cause auction website is successful with their popularity and also their services offered, such as the convenient method of transactions, goods available for auctions... Even if B offers more points but poor service, it will lose users. [B]

2. Personally, I feel that incentives given for purchase such as bid points are not very successful in attracting customers, especially if there is only a one-point difference. It depends on the products that the internet companies are selling. If the items sold are expensive, then points accumulated would be high and thus, able to exchange for products using points. And moreover, many of these products are often given only accumulation of many points. [SAME]

3. I will not make a transaction of the prize... [SAME]

4. Loyal customers to both companies will each persuade new comers to join the companies. Also, new users will look for better services and more secured transactions besides attractive prizes. [SAME]

5. The bid points are actually not very far from each other. Using such an idea is not necessarily a very good incentive in attracting more users, as some might find it too much of a hassle. [SAME]

iii. No Written Comments (N=3)

Background: Principles of Economics & Introductory Macroeconomics

Appendix Table A3: The Written Explanations for Store Choice

i. No Money Illusion (N=18)

Having more lucky draw tickets per \$10 purchase does not affect the probability of winning.

1. The chances of winning the lucky draw is [are] the same. [SAME]
2. If consumer realize that by getting 2 ticket[s] for \$10 spent, the chances of being [winning] is the same if every consumer gets 2 tickets. [SAME]
3. The probability to get selected will be the same for both stores. Although store B gives more tickets but the chances is [are] still the same as store A. [SAME]
4. I think it doesn't matter, since both stores are only offering 20 lucky winners. Even if I shop at store B, I will still have the same chance winning the lucky draw with if I shop at store A. [SAME]
5. Since the lucky draws of A and B are separate draws, if everybody in draw B gets 2 tickets, there would just be approximately double the number of tickets to draw from but that does not increase the individual's chances of winning. I'm assuming most customers can see that. But anyhow, the prize money is very small and groceries are a must so I don't think its demand would be very elastic to such non-monetary competitions. [SAME]
6. I seriously think that the number of customers would not differ largely as the ultimate goal of the consumers is to purchase their goods. Since both supermarkets are offering essentially the same prizes, most consumers will actually stick to the supermarket they usually visit. 2 tickets for 1 person represents equal chances for each person. [SAME]
7. I think that the chances of winning the lucky draw is [are] still the same no matter how many tickets are given... [SAME]
8. Number of lucky draw tickets when easier for u [you] to get in store B will be easier for other consumers who buy stuff in store B to get as well. So in the end, the chance of winning the draw is the same since, tickets in B does not mean eligibility in A's draw. A may even have more customers because u [you] still have the same chance of winning the draw despite having to spend less time filling in less lucky draw tickets. [SAME]
9. Because the draw will only be made when sales reach \$100000 for both stores, it doesn't matter if you get one or two tickets as it is still for every \$10 spent. [SAME]
10. Since when B ↑ the tickets to 2 tickets, everybody at B will still get an even chance, its [it's] not as if you are the one person getting the special 2 tickets. The percentage works out the same. [SAME]
11. The chances of winning is [are] relatively equal. In store B where 2 tickets are given for every \$10 spent, everyone who spends \$10 will have 2 tickets and everyone will have an increased probability of winning which is similar to store A where everyone has only one chance. ⇒ [SAME]
12. Giving 2 tickets to all won't ↑ the proportion of entries you have. [SAME]
13. The number of lucky winners does not increase → equal chances of winning the lucky draw. [SAME]
14. Because the probability of being picked in the lucky draw is the same for both stores. [SAME]
15. The probability of each customer winning the shopping voucher is the same for each store. [SAME]

16. Since store A and store B are indifferent other than the fact that B is giving more tickets, the chance of getting the shopping voucher is the same. Assuming 3 people A, B, C patronizes both stores and the [they] spend the same amount of money, the chances of getting the prize is [are] the same. [SAME]

17. Same chance of winning the draw in both store. Everyone is given the same amount of chances. [SAME]

18. If everyone thinks others will choose Store B, it will be relatively difficult to win the draw. Thus, they will feel indifference. Moreover, within Store B, the probability of winning will be the same, as everyone has 2 tickets in B. [SAME]

ii. Money Illusion (Total N = 76)

A. Direct Effect I – Better Chance (N=30)

Having more lucky draw tickets per \$10 purchase increases the probability of winning.

1. This is because, for every two tickets store B gives, it has to accommodate the customers for the prize. The chances of a customer winning is higher. Also, it will increase its customer only in short run. But store A is giving out 1 ticket. Even though, it loses out to store B in the short run, it will win back the customers later in the long run. But we need to consider factors like customer loyalty and distance from which the shops are located [A]²⁷

2. It is because there is a higher chance for an individual to win the lucky draw at supermarket B. [B]

3. More chances of winning. [B]

4. The chance of winning something in store B is higher. Therefore more people will visit B. [B]

5. Incentive attracts more customers. [B]

6. Impulse-mentality. Rational customers would want more chances to win in a lucky draw. [B]

7. Just think about the customers attraction, Store B has better deal than Store A's. [B]

8. More tickets. [B]

9. Incentives for the draw. Same goods. [B]

10. Kiasu [Afraid to lose] Singaporeans. [B]

11. B gives more tickets for the same amount of sales. So more demand for B. [B]

12. Higher chance of winning \$. [B]

13. S'poreans [Singaporeans] are kiasu [afraid to lose]. Store B cause [because] yield more benefits. [B]

14. Obviously [it] is B because ie [that is] human nature – more is better than less. [B]

15. 2 tickets for \$10 spent... since the stores are similar in every other aspect. [B]

16. Customers in that store would get a higher chance to win the lucky draw. [B]

17. Because there is an advantage of one more ticket for every \$10 spent in store B. In the end, B will have more customers. [B]

18. Since store B promotion is more attractive, it'll induce more customers! [B]

19. Consumers will be attracted by the possibility of winning a prize in the lucky draw. [B]

²⁷The reasoning suggests that the student should have chosen as his response either store B or the same for both stores but he had in fact chosen store A.

20. More probability of winning. [B]
21. More chance of winning for customers! [B]
22. The same prize for double the chances of winning. Not choosing B over A would be irrational. [B]
23. People increase their chances of winning by increasing the no [number] of tickets they have... [B]
24. The possibility of becoming a winner at store B's lucky draw will be higher. This will thus attracts more customers who want to maximize their satisfaction. [B]
25. A higher chance of winning at store B. [B]
26. Store B is giving out 2 tickets for every \$10 spent instead of one every \$10 spent in store A. As every thing (other attributes are similar) remains similar, people will be more attracted to store B as that will increase the store sales to \$100000 faster thus the lucky draw can be carry [carried] out faster and chances are higher as now they has [have] 2 tickets for every \$10 spent, chances are higher. [B]
27. In the SR [short run], store B will benefit from higher sales. But it will soon realize that it also has to give more prizes to more winners. Thus increasing cost. In the LR [long run], it will go back to 1 ticket for every \$10 spent. [B]
28. Since store A did not follow the cut in store B, it could mean that store A is currently doing better than B. Hence, when B increases the no. of lucky draw to 2 per \$10 spent, store B may only attract as many customers as A. [SAME]
29. LR [In the long run], I think store B will go back to the original plan. Both uses [use] same plan. [SAME]
30. It depends on whether store A wants to practice price competition in its goods. If store A gives a better price of its goods but stick to one coupon, perhaps customers will still patronise. However if nothing else changes except for the number of lucky draw coupons, then rationally speaking, I think store A will lose out. But if store A is more established, it might win customers because of its established store name. [SAME]

B. Direct Effect II – Worse Chance (N=3)

Having more lucky draw tickets per \$10 purchase lowers the probability of winning.

1. The probability of winning at store A is higher as they [there] will be lesser [less] tickets. [A]
2. Since store B offer [offers] two tickets, it will also means [mean] that there are more competitors in the lucky draw, thus the chances of being a winner will be reduced. Henceforth customers might be attracted to store A which they think will have a higher chance of winning. In the end, net effect will be same for both stores. [SAME]
3. True that people will be attract to B is [as] 2 tickets are given out but customers may feel that there are more chances in winning at A as there are less tickets to choose from. [SAME]

C. Direct Effect III – The Loss of Goodwill (N=5)

The store that violates an implicit agreement loses goodwill. It will be shunned even if the store's offer appears more attractive.

1. Because Store A is very considerate and morally upright, did not want consumers to be in dilemma. Customers may suspect Store B are desperate to increase sales. [A]
2. Store B reneged on its original promotional plan, thereby damaging goodwill with the customers that bought during

the 1st week. Store B is likely to lose repeated sales from this batch of customers. [A]

3. Store B may not be able to sustain the higher cost of giving more lucky draws and have to abandon its original plan → customers may stick or go to store A → goodwill. [A]

4. I like people with a large perspective. [A]

5. In the end, store B will have to change its policy again. Some customers may predict this and will go to store A instead. But seriously, gut feeling tells me that store A will attract more customers because store B is obviously a cheaterbug [?!] [SAME]

D. Direct Effect IV – Do Not Care About Lucky Draw (N=15)

Even though having more lucky draw tickets per \$10 purchase appears more attractive, the consumers simply do not care about lucky draw because the probability of winning is very small, etc.

1. I believe that lucky draw coupons will not play a significant role in attracting customers. [SAME]

2. Few customers actually are bothered or attracted by extra ‘freebies’ like lucky draw and are more concerned about their purchases as in empirical studies. Therefore, the 2 stores would attract roughly the same number of customers. [SAME]

3. Initially, customers might be attracted to B for the extra ticket. But ultimately, they would not bother anymore since chances of winning aren’t too high anyway. [SAME]

4. In the end people are going to realize the chances of winning the prize isn’t very high, so it doesn’t matter which store they patronize. [SAME]

5. Assume that consumer’s consumption patterns are unchanged and their lifetime budget is unchanged, an occasional difference in promotion doesn’t really affect their number of visits to the stores. In the end, only 20 lucky winners will benefit. I mean who cares about the promotion anyway. [SAME]

6. It is because the lucky draw may only attract a certain minority group who are kiasu [afraid to lose] and desperate to win the lucky draw. Perhaps it may not affect the number of people visiting the two stores. [SAME]

7. Customers with elastic demand who cares [care] more about such lucky draws will only consist of a small amount. The amount each customers are [customer is] able to buy are [is] also limited. [SAME]

8. Most people buy from the shops because the goods they are buying are necessity and they would rather buy at a place convenient for them. The lucky draw could be seen just a bonus. [SAME]

9. Does not really matter to me because I never win any lucky draw before so I don’t believe in them. [SAME]

10. Each store will have their own regular customers & I think that regular customers would not be affected by any incentives of a lucky draw, regardless of the chances. Besides, I guess more kiasu [afraid to lose] aunties [housewives] would be more interested. [SAME]

11. Supermkt [Supermarket] A’s customers maybe still prefer to shop at supermkt [supermarket] A despite the difference in lucky draw tickets issued. Anyway, not all the customers will be bothered abt [about] the tickets. It all depend on the individual’s perspective. [SAME]

12. It really depends. If consumer are that sensitive to the lucky draw coupons, probably they would patronize store

- B. However, more often than not, at least personally, I do not bother to spend up to \$10 just to obtain the coupons. Moreover, they are “lucky” draws. It all depends on luck! [SAME]
13. B may be more lucrative but it may be too crowded. [SAME]
14. May be too crowded in B. [SAME]
15. Because some people like me would go [to] store A. Simply because there are too many people at store B. [SAME]

E. Indirect Effect – Others May Be Susceptible (N=23)

The student is personally illusion free but believes that others are susceptible to money illusion.

1. Since most people think that the majority will go to B, thus the chance of winning for B will be lower. Therefore, most people will go to A thinking that other went to B. [A]
2. Even though the chances of striking the prizes for lucky draw is the same for stores, the two tickets will give the consumers a misconception that they have a higher chance of winning, hence store B will attract more customers due to imperfect knowledge. [B]
3. Customers perceive double the tickets means double their winning chances. [B]
4. Even though probability is the same, store B will attract more customers because without thinking carefully, customers will think that they will have a higher chance of winning for Store B. [B]
5. People are not rational in reality. [B]
6. Probability is the same, but customers in Singapore are kiasu [afraid to lose]. [B]
7. ...cos [because] the chance of being drawn [drawn] remains the same, if the customers do their mathematics... customers do not think much... [B]
8. Consumers will be fooled at first impression, due to lack of attention, given to the probability of chance. [B]
9. It gives the customers higher hopes of winning the prize. [B]
10. I think that people generally don't think rationally. On the whole, if everyone that buys from store B, they should still get the same chance of winning. But the fact is, they think of themselves that will get more chance. Hence they will go to Store B. [B]
11. Although both stores offer similar chances of winning, those people who do not think rationally may think they have a higher chance in store B. Thus, more will shop at B. [B]
12. The chances of winning in the lucky draw for store A and B are the same, though more people might be misled into thinking that store B has higher chances, due to 2 tickets for \$10. [B]
13. Since by spending the same amount of money, customers from store B may seem to get more chance of winning (although it actually is not). From customers' point of view, they will spend more. [B]
14. By doing so, store B creates a perception that chances of winning are higher because for the same amount of money spent, the no. of tickets obtained are higher. To the individual, seems more value for money. [B]
15. Even though the logical choice should be both stores since the probability would be same in store A or store B, we must understand that the range of customers are diverse and many may not understand this fact... [B]
16. The mentality that they would have more chances of winning when spending in Store B. [B]

17. Store B will attract more customers in the end because customers will feel that they will have a higher chance of winning in the lucky draw and thus more customers will turn to store B. [B]

18. B because consumer's short sighted and see that B gives > tickets than A, higher chances of winning and B > customers. [B]

19. Customers will feel that there is higher chance of being picked for the lucky draw and win the prize. [B]

20. In the end, only 20 lucky winners are picked from each of the two store[s]. Therefore the chances of shoppers winning at A or B is [are] the same. But shoppers will not differentiate the two shops and visit them equally. therefore, A and B will have the same number of consumers. In fact, A may save money as it prints 10,000 less ticket[s]. However, if consumers are not rational and think that shopping at B is better because of more tickets, B will attract more customers. [SAME]

21. Well, ultimately there will be 20 winners per stores [store]. No matter which store the customers choose, there can only be 20 winners per store. I guess store B will reach \$100000 first and announce their winner[s]. Sales will then be diverted to store A till it reaches \$00000 where 20 winners will be announced. In the end, it will be the same. [SAME]

22. Double the tickets gain counts for nothing when everybody else also gains double. The probability is the same. But because Singaporeans are kiasu [afraid to lose] then maybe B will attract more customers. [SAME]

23. Initially, my answer was store B. This is because, in the SR [short run], consumers feel better off having 2 tickets for every \$10 spent. But as they realize that the prizes of the stores remain the same, it doesn't make anybody better off. [SAME]

iii. No Written Comments (N=3)

Appendix B: Written Comments of Non-Economics Students

These are actual written comments by the students. The written comments are grouped under different categories. Each category starts with a heading and a brief description. The number of comments that fall under each category is denoted by N. I have left out comments that are uninformative.

At the end of each written comment in the square brackets are the actual choice of the respondent, followed by the respondent's major, his current semester at the university, and his nationality.

Appendix Table B1: The Written Explanations for Bid-Point Choice

i. No Money Illusion (N=88)

The number of bid points per student has no effect on class allocation.

1. I think how many points have been given is not the most important things. If I have got 500 more points, others also get the same as me, there is no different [difference] between 1000 points or 1500 points. You can bid successful [successfully] or not depending on several factors, such as bidding skills, relatively left points and so on. [1000 points - Engineering - 1st semester - PRC Chinese]
2. Giving every student equal additional points will increase the minimum successful bid. It won't solve the problem. [1000 points - Environmental Engineering - 2nd semester - Indonesian]
3. If everyone got an additional 500 pt [points], it won't make any changes I think. [1000 points - Life Science - 3rd semester - PRC Chinese]
4. If everyone given an extra 500 pts [points], does it make any difference? Bidding will go higher as they have more bidding pts [points]. [1000 points - Chemical Engineering - 3rd semester - Malaysian]
5. Increasing the bid points does not really help the students cause [because] everybody is having the same amount of increase of points. [1000 points - Materials Science - 3rd semester - Singaporean]
6. Imagine ~~imagine bid point is your income~~. Supply = capacity. Demand = point. More bid points increase the demand. [1000 points - unspecified - 1st semester - PRC Chinese]
7. Everyone have [has] the same amt [amount] of pts [points]. [1000 points - Chemical Engineering - 3rd semester - Singaporean]
8. Makes no difference as everyone has same starting points. Problem is not solved. [1000 points - Engineering - 3rd semester - Singaporean]
9. There'll be no difference between 1000 and 1500 bid points if every student is to be given equally the same. The competition for bidding remains unchanged. [1000 points - Math - 1st semester - Malaysian]
10. The absolute number of pts [points] does not matter. If a person is willing to spend 10% of his points on one module, he will just put more pts [points] given 1500 pts [points]. The situation will end up the same no matter 1500 pts or 1000 pts. [1000 points - Engineering - 5th semester - Malaysian]
11. No matter how many points are given, it doesn't make any different [difference] to every individual as all of them

have the same number of bid points. You still may not be able to get your desired module anyway. [1000 points - Engineering - 1st semester - Singaporean]

12. 500 more points just mean higher bid points dumped in each course. Doesn't solve the solution. [1000 points - Engineering - 3rd semester - Singaporean]

13. It doesn't matter when everyone is the same. If they have got extra 500 points each. The situation will still be the same! [1000 points - Life Science - 1st semester - PRC Chinese]

14. Wouldn't help much with the additional points. [1000 points - Computer Science - 1st semester - Singaporean]

15. If every student is given an additional 500 points, the bidding points for each courses will also get higher. There is no use for the college to give any additional points since some of the students will still fail to get the course they want. [1000 points - Material Science - 1st semester - Malaysian]

16. Since everyone will have the same number of points it does not really make a difference. [1000 points - Computer Science - 1st semester - Singaporean]

17. But note: if every student was given the same amount of additional pts [points] , everyone would be elevated to a higher level by the same amount. The overall situation may still be the same as with 1000 bid pts [points] - if range of max bid pts [points] rises & min bid pt rises. [1500 points - Life Science - 3rd semester - Singaporean]

18. If everyone gets more pts [points], it will still result in fierce competition. An education system should be to let the students have the chance to learn what they want to learn and not restrict them due to fixed capacity. Surely alternative measures can be made to accomodate [accommodate] them. [No preference - Chemical Engineering - 5th semester - Singaporean]

19. It will result in the same. Coz [Because] everyone will have higher bid pts [points] so probably the student will not get the class too. [No preference - Chemistry - 1st semester - Singaporean]

20. It doesn't make a difference since EVERYBODY is given 500. Relatively, no difference. [No preference - Chemical Engineering - 5th semester - Malaysian]

21. No difference. [No preference - Materials Science - 1st semester - PRC Chinese]

22. Even if the number of points was increased, some students may not get the class they wanted as other students may continue placing high bids for classes. Instead of giving extra points, it would be more effective to make it an open bid where the points for each module can be seen. The number of points one gets does not make that big a difference. [No preference - Life Sciences - 5th semester - Singaporean]

23. This is not a question of the number of bid points given, but the degree of transparency of the system. It would be better if it were a [an] open bid system as students would have a better idea of their chances of being allocated the modules, and would give them up for other modules if the bid points get too high. [No preference - Life Science - 5th semester - Singaporean]

24. Every student still get the same amount of pts [points]. So in the end, it doesn't matter. Modules will have higher bid points cause everyone has the increase in pts [points]. Pple [People] will still not get the modules they want. [No preference - Life Science - 5th semester - Singaporean]

25. Everyone is given more pts [points] hence there is no difference. [No preference - Mechanical Engineering - 3rd

semester - Singaporean]

26. If everybody gets an \uparrow of 500 pts [points], the result will be the same. [No preference - Computing - 1st semester - Singaporean]

27. The number of points do [does] not really matter. Even if everyone gets an increase of 500 points, some will still complain of not having enough points to get their modules. [No preference - Chemical Engineering - 3rd semester - Singaporean]

28. You see the fact is no matter how many points you give the students, as long as they can't get the classes they want, they will still complain. Even if you give them 10000 pts [points], cause everybody will have the same increment of pts, so the competition is still the same. [No preference - Applied Maths - 1st semester - Singaporean]

29. If everyone gets the increase, it still wouldn't make much of a difference. [No preference - Material Science - 1st semester - Singaporean]

30. It doesn't really matter as everyone will still get the same additional 500 pt [point] and bid pt for modules will still goes [go] up. [No preference - Engineering - 3rd semester - Singaporean]

31. Is there a difference if every student gets 500 points more? It just means I have more points to bid with which so does everybody else. [No preference - Life Science - 3rd semester - Singaporean]

32. Everyone is entitled to the addition, which makes no difference to the scenario as the system is a close bidding system. [No preference - Computing (E-commerce) - 1st semester - Singaporean]

33. Be it 500 more points or same amount of 1000 points, you may still not get the class you want. If 500 more points, people will still increase by same amount so you still will end with the same result. [No preference - E-commerce - 1st semester - Singaporean]

34. In my opinion, it doesn't matter how many bid points the students are actually given. It is because the choice made is actually based on the ratio of bid points used to the total bid points available. Hence, if a student is really interested in a particular module, the ratio of bid points used to the amount present will be relatively high, and it doesn't really matter how much bid points one is given. [No preference - Mechanical Engineering - 3rd semester - Singaporean]

35. It doesn't matter, more pts [points] will cause the bids to be larger but the no. of people not able to get the class will be the same because the class size is still the same. [No preference - Chemical Engineering - 5th semester - Singaporean]

36. Everyone in the college has the same amount of bid point, therefore, an additional 500 points does not make any difference. If you want to get the class, you have to bid more. [No preference - Life Science - 1st semester - Malaysian]

37. At the end of the day \rightarrow effect will still be the same. Increasing by 500 pts [points] only results in creating only a higher minimum bid for modules. Doesn't achieve desired effect. [No preference - Engineering - 3rd semester - Singaporean]

38. If 500 more points are given to everyone, it makes no difference from the original 1000 points, it still does not guarantee the class you want since everyone will have 500 more points to use for bidding. IF everyone "show hand," the new successful bid will be just 500 more than the original successful bid from the old system. [No preference - Engineering - 3rd semester - Singaporean]

39. Even if more points are given, if the students decided to put all their points in those popular modules, effectively, this allocation of additional points to all students will not solve the problem of the students failing to get those popular modules. [No preference - Engineering - 3rd semester - Singaporean]
40. Both ways the bid points will be as high. Even if 500 more pts [points] are given the bid for the modules will increase too. Unless the students have to do sth [something] to earn their own bid pts [points]. [No preference - Chemical Engineering - 5th semester - Singaporean]
41. The result will be still the same if everyone gets extra 500 pts [points]. [No preference - Life Sciences - 5th semester - Malaysian]
42. With higher bid pts [points], every student will just bid higher and the result will be the same. [No preference - Engineering - 3rd semester - Singaporean]
43. Because if given more bid points, more people will then bid more. Therefore, it doesn't improve the situation. [No preference - Engineering - 1st semester - Singaporean]
44. Even if everyone is given the extra points, the other year 2 or 3 students will definitely have more than the freshies. The bidding points will still be beyond what we have. If it is a close bidding system, everyone will be using maximum points. So we will still be outbid. [No preference - Life Sciences - 1st semester - Singaporean]
45. It will still not make a vast difference to those who raise their bids to the maximum. It would be a repeat of the current trend only that the successful bids would be higher. I think... :-) [No preference - Chemical Engineering - 3rd semester - Singaporean]
46. No matter how many bid points are given, everybody is given a fair share. [No preference - Life Science - 1st semester - Singaporean]
47. Since everyone in the end will still has the same points for that year. So ratio... still the same. [No preference - Engineering - 3rd semester - Singaporean]
48. It will not make a difference, human mentality would be to dump all their points or as much as they can afford into a course, the more points given = the more points for students to dump. After all, there is no penalty, unused points will be carried forward. [No preference - Information Systems - 1st semester - Singaporean]
49. Because every student is given additional 500 pts [points]. It makes no difference. [No preference - Engineering - 1st semester - PRC Chinese]
50. Everyone is the same. [No preference - Engineering - 1st semester - PRC Chinese]
51. It does not make a difference. Since everyone gets the extra points, the bids will increase in relation to the points given, therefore negating the increase of given bid points. The college should survey trends and allocate students based on the student's interest and allocate resources to the students. [No preference - Computing - Unspecified - Singaporean]
52. There is no difference if everybody is getting 500 points more. [No preference - Computing - 3rd semester - Singaporean]
53. Increase in bid points for every student does not help in this case. [No preference - Engineering - 5th semester - Singaporean]

54. If everyone gets additional 500 pts [points], it doesn't make a difference. [No preference - Engineering - 5th semester - Singaporean]
55. Even if every student is given an additional 500 pts [points], it would make no difference because every student is given the same amount of points. So every student would be able to increase their bid points and the ratio would still be the same. [No preference - Life Science - 1st semester - Malaysian]
56. Does it matter? Giving more points to everyone would mean everyone using more points to bid. Ranking wouldn't change much I guess. Doesn't change anything. [No preference - Communications and Media (School of Computing) - 1st semester - Singaporean]
57. If ALL students were given more points, and enrollment is still restricted, it doesn't help any student get into a class they want as other students could also bid more points cos [because] they have more points to spend. So it doesn't make a difference. [No preference - Life Sciences - 1st semester - Singaporean]
58. No matter how many pts [points] are added to each account, some students would still be disadvantaged. 1st year student has no way to compete with 4th year student as the later has accumulated their pts [points]. [No preference - Math - 1st semester - PRC Chinese]
59. No matter 1000 pts [points] or 1500 pts [points], as long as everyone has the same points, the results will not be affected greatly. [NO preference - Engineering - 1st semester - PRC Chinese]
60. Everyone is on equal grounds, no matter how much the points were allocated. So it's down to luck, basically. However, there needs to be a system to "protect" the freshmen, just like what NUS currently does. [No preference - Computing - 1st semester - Singaporean]
61. The points itself cannot change the ranking of preference, hence the percentage of points that are distributed to each subject. [No preference - Material Sciences - 3rd semester - PRC Chinese]
62. More points will not solve the problem too because the students can also bid at higher points. More points will not affect the ranking of preferences too. [No preference - Information Technology - 5th semester - Malaysian]
63. It's true that give 500 additional points may makes [make] some students happy, but if we think about it, there is nothing changed in this competition as everyone has got 500 more points. [No preference - Engineering - 1st semester - PRC Chinese]
64. If everyone gets the same amount of additional points, whereas their preferences remain the same, it wouldn't make much difference to their bidding result since they are likely to place their maximum bid on their most preference course. Accumulation of points would result in some having extraordinary number of points, making it even more difficult for some to get their classes. [No preference - Life Sciences - 1st semester - Singaporean]
65. Doesn't make a difference since everyone will have the same points. They will just put in all the points to bid for the module they wanted since only min. bid point is deducted. [No preference - Chemical Engineering - 3rd semester - Malaysian]
66. Its [It's] a proportional thing. If the bid pts [points] given increases, the pts [points] bidders used to bid will also increase relatively, thus those students who can't get it might also not get it. No difference. [No preference - Chemical Engineering - 3rd semester - Malaysian]

67. More points? → everyone got more → everyone put higher bid → what is the difference? → “hot” course still competitive regardless of bid pt. [No preference - Chemical Engineering - 3rd semester - PRC Chinese]
68. No one would have any added advantage over others. [No preference - Chemical Engineering - 3rd semester - Singaporean]
69. By increasing the amount of bid points will not change the way the students react toward the bidding. [No preference - Engineering - 3rd semester - Singaporean]
70. In the end, everyone has the same increment. Those with more points will use more points to bid. Those with lesser points will use more points but in the end they still can't outbid those with higher points in the beginning. [No preference - Engineering - 3rd semester - Singaporean]
71. It will be the same unless I'm the only one getting the extra 500 points. [No preference - Engineering - 3rd semester - Singaporean]
72. Everybody has the same points. No difference. [No preference - Chemical Engineering - 3rd semester - PRC Chinese]
73. Makes no difference, 'coz [because] with an ↑ in pts [points], bids would be highered [higher] as well due to everyone having more bid pts [points], no advantage over others. [No preference - Computing - 1st semester - Singaporean]
74. Will still max out bidding points for interested module if really desperate, more or less does not matter. [No preference - Engineering - 3rd semester - Singaporean]
75. Increasing the amount of points given to each student will respectively increase the bids input by the students for that particular module. This kind of increase will then be ineffective. [Mechanical Engineering - 3rd semester - Singaporean]
76. Doesn't matter what points you have since everyone has the same amount of points. [No preference - Engineering - 3rd semester - Singaporean]
77. Since everyone will [be] getting the same amount of bid point, I don't think [there is] any difference whether the bid point [is] raise [raised] to 1500. The competition will still be there. Most important to make sure everyone get their core module. [No preference - Life Sciences - 3rd semester - Malaysian]
78. Coz [Because] if gives every student an additional 500 points, then every students are [student is] having the same 1500 bid points, the results will be same as 1000 points. No differences between 1000 & 1500 points. [No preferences - Life Sciences - 5th semester - Malaysian]
79. I guess it doesn't make any difference. The competition will still be the same since everyone will be getting the same amt [amount] of points. Basically, it comes down to the individual, on how he manages his bid pts [points]. [No preferences - Chemical Engineering - 3rd semester - South Korean]
80. I think this does not work as every student have [has] a fair chance of getting their bid because they have a fair allocation of equal points (no matter 1000 or 1500) so what actually determine their successfulness [success] in the bid on this system is by the order of their preference. Maybe another system of giving the unsuccessful bidder higher priority on the next round of bidding if they continue to bid on the same module would be beneficial to the student. [No preference - Computing (E-commerce) - 1st semester - Singaporean]

81. Because everyone have [has] the same amount of points. It doesn't matter how much more is increased. It may not improve the situations. [No preference - Computing - 1st semester - Singaporean]
82. If a course is hot, no matter how much points you have, no difference. [No preference - Computing - 1st semester - Singaporean]
83. Everyone gets the additional points. Eventually the same problem would arise, but probably to a lesser extent. [No preference - Engineering - 5th semester - Singaporean]
84. Having more points would let the students be more able to compete with seniors who already have high bid points. However, it would not make a difference among 1st year students and instead, having more bid points would raise an average bid point for a module and it would also be a headache. Make sure there are enough places for students to study in their core modules. [No preference - Chemistry - 1st semester - Malaysian]
85. This is because with the addition [additional] 500 pts [points], the competition to get into a certain class would still be the same, especially if its [it's] very popular. Furthermore, it might allow allow some students to rise [raise] the bid ~~to a certain class~~ to very high level such that other students will be outbid. [1000 points - Computing - 1st semester - Singaporean]
86. It will only cause the minimum bid point to be raised. People will bid as high as they can and the additional points will just be put in as well. People who value the class will bid as high as possible and it will only create more problems. [1000 points - Chemistry - 1st semester - Singaporean]
87. It makes no difference by allocating more bid points. It is the allocation of bid points to diff. [different] accounts that matter more (e.g. program and general). Besides, more bid point for everyone means it does not help to increase competition. [1000 points - Engineering - 1st semester - Singaporean]
88. Do like what the biology department is doing. Stop those with A' level econs from taking econs, unless they major in econs. No need for additional 500 points because people will abuse the additional points like how they abuse the 1000 pts [points]. Please don't do a close bidding. It will make bidding very difficult. Like COE [Certificate of Entitlement to own a car in Singapore], points will be wasted. [1000 points - Mechanical Engineering - 3rd semester - Singaporean]

ii. Money Illusion (Total N=31)

A. Naive Money Illusion – More are Better. Better Chance (N=4)

More points are better than less. With the additional points, the probability of success is higher.

1. It helps us to get a better chance to study the modules we want. [1500 points - Chemistry - 1st semester - PRC Chinese]
2. Studying something you do not like can be much of a torture. Even worse still, if you have an interest on a particular module, but you cannot get it. It is frustrating to many students, and not only me. Perhaps increasing the bid points may alleviate the problem slightly but not totally. Hopefully, really 1500 points can help us. [1500 points - Life Sciences - 3rd semester - Singaporean]
3. More is better than less. [1500 points - Engineering - 2nd semester - Malaysian]

4. Econs concept: people always want more than what they have. [1500 points - Chemical Engineering - 5th semester - Singaporean]

B. Mental Accounting I – Better Point Allocation (N=18)

With the additional points, the student can increase his bids for the most desirable classes, while keeping the bids for the less desirable classes unchanged. The additional points allow a better points allocation.

1. While giving more points equally to all students put them on par, more points would give a flexibility in the allocation of points between the bids by the students. More the merrier. [1500 points - Electrical Engineering - 5th semester - Singaporean]

2. Since I really want to get the class, I do not care how many points I have to give out (bid). So I will bid the maximum point. Even if others may not bid so many points, I will still be charged the minimum successful bid only instead of 1500 points. Therefore to get the class I want and there is only one class, I would bid the maximum points. [1500 points - Engineering - 1st semester - Malaysian]

3. Because we can bid more points for the subject we wanted. [1000 points - Chemistry - 1st semester - Malaysian]

4. If I'm really eager for going to the class I want, I will surely spend all the marks [points]. And there must be some people who won't spend the extra points so I can get what I want. Moreover, some of my marks [points] can be returned. [1500 points - Life Science - 1st semester - PRC Chinese]

5. If I want to get the module I wanted badly, I would insist on bidding for it at the highest point since that would increase my chance of getting a place for that module. [1500 points - Engineering - 3rd semester - Singaporean]

6. With more pts, there is greater flexibility in allocating points to various courses of choice, hence higher chance of obtaining course of choice. [1500 points - Life Science - 3rd semester - Singaporean]

7. More points, more choices. [1500 points - Engineering - 1st semester - Malaysian]

8. More flexibility to bid for courses desired. [1500 points - Engineering - 2nd semester - Singaporean]

9. More points means that there is a higher chance of securing the module that one really wants. [1500 points - Chemical Engineering - 5th semester - Singaporean]

10. Good approach for students to get a popular module if they are really interested in it with no pity. [1500 points - Information System - 3rd semester - PRC Chinese]

11. More points allow us to have a better standing in the bids for the module we want. [1500 points - Chemistry - 1st semester - Singaporean]

12. I would have more points to allocate the subjects that I desperately want to bid. [1500 points - Engineering - 3rd semester - Singaporean]

13. More points to allocate to preferred module. [1500 points - Chemistry - 3rd semester - Singaporean]

14. With more points the students can have more flexibility in planning their choices. However, I feel that the close bid system is not a good idea in the 1st place. [1500 points - Life Sciences - 5th semester - Singaporean]

15. With more points there's more possibilities for students to allocate points, and higher chance for them to get a certain course. [1500 points - Life Science - 3rd semester - PRC Chinese]

16. To ensure that there's a higher chance of me getting into the subjects that I would like to take. [1500 points - Chemistry - 1st semester - Singaporean]
17. The more points the merrier. Furthermore, it allows for more flexibility. [1500 points - Chemical Engineering - 3rd semester - Singaporean]
18. To optimised [optimize] my choice to be selected. [1500 points - Life Science - 1st semester - Malaysian]

C. Mental Accounting II – More Savings (N=0)

Even if the student fails to get their most desirable classes, with the additional points, he can save more for the future semesters.

D. Mental Accounting III – Bidding Constraint (N=5)

The student needs the additional points to relax his bidding constraint.

1. Use up the 1500 points to obtain the class I want to fulfill the college requirements. [1500 points - Engineering - 5th semester - Malaysian]
2. So that if I put that vote, then I dun [don't] need to bother [be bothered] with it anymore. [1500 points - Chemical Engineering - 3rd semester - Malaysian]
3. More points to bid for choices. [1500 points - Chemical Engineering - 5th semester - Singaporean]
4. We should use the maximum of what is given to us, otherwise the points will be wasted. [1500 points - Computational Biology - 1st semester - PRC Chinese]
5. So that can have more pts [points] to bid. [1500 points - Engineering - 5th semester - Singaporean]

E. Mental Accounting IV – Not Bidding Constraint (N=3)

The student does not need the additional points because his bidding constraint is not binding.

1. At this point, I feel that it is still sufficient. [1000 points - Electronic Commerce - 1st semester - Singaporean]
2. I am just willing to use up 1000 pts [points] for bidding the course. [1000 points - Chemical Engineering - 3rd semester - Singaporean]
3. Dun [Don't] need the pts [points]. My fac [faculty] allocates the core modules automatically. [1000 points - Engineering - 3rd semester - Singaporean]

F. Mental Accounting V – Irrational Exuberance (N=1)

Having more points encourages overbidding.

1. There may be a shift in the equilibrium to a more unstable state. Since the problem exist for 1000 bid points, it can also exist in the event everyone is given 1500 points. [1000 bid points - Engineering - first semester - Malaysian]

G. Do Not Care (N=0)

The student does not care about classes and hence the number of bid points.

iii. No Written Comments (N=6)

iv. Uninformative Comments (N=2)

Appendix Table B2: The Written Explanations for Listing Choice

i. No Money Illusion (N=39)

The number of bid points per transaction dollar has no effect on who gets the prize.

1. Since the points worth the same in the two companies to customers. [SAME - Computing - PRC Chinese]
2. You should know why. [SAME - Engineering - Singaporean]
3. ∴ U should know y. => Concept of normalising!! [SAME - Chemical Engineering - Singaporean]
4. It depends on the prizes offered by the companies. The number of bid points are immaterial as all users will get the same number of bid points. [SAME - Engineering - Singaporean]
5. Though company B offer 2 points / dollar worth of transaction, the points needed to exchange for a gift will also be higher than that of company A. Secondly, the gifts offered by both companies may be different, hence attracting different crowd of people. [SAME - Engineering - Singaporean]
6. Each user gets the same unit of bid pts. for every dollar for both company. [SAME - Comp. Finance - Taiwanese]
7. The prize is the same. There is no use having the more bid points in the same company as everyone get [gets] the same bid point. It amounts to the same thing. [SAME - Chemistry - Singaporean]
8. ~~All users will get the same bids points within that company & assuming it is therefore dependent on the no. of bid points to get the prize. It is dependent on the hi.~~ [SAME - Computing (business focus) - Singaporean]
9. Since both companies have their own websites with their own rate, chances are equal among all bidders from company A or B. [SAME - Engineering - Malaysian]
10. I think company A require [requires] lower points to get the prize prizes whereas B require [requires] more. [SAME - Computing - Singaporean]
11. A and B are two independent transaction and auction realms as the bid points are not interchangeable between customers to A and that to B, so competitiveness and scarcity of prizes in both A and B are comparable resulting in equal attractiveness to customers. [SAME - Electrical Engineering - PRC Chinese]
12. By logic? [SAME - Chemical Engineering - Singaporean]
13. Since the highest bidder wins anyway. [SAME - Chemical Engineering - Permanent Resident of Singapore]
14. Company B's bid points are higher, meanwhile, the highest bid points are higher. [SAME - Engineering - PRC Chinese]
15. Company B: every users [user] can get two bid pts for every dollar's worth, it will be the same as company A by just divide by 2, the rate of increase is the same. [SAME - Engineering - PRC Chinese]
16. Any user start [starts] with the baseline. They do not have any advantage towards any other user. [SAME - Chemical Engineering - Singaporean]
17. Everyone in coy [company] A or coy B received his fair amt [amount] of pts [points] on similar basis as others, i.e., relative wise, no difference. RELATIVITY. [SAME - Chemical Engineering - Singaporean]
18. Although B offers more bid points, on the average, everybody will get double the points in B than A. In the end, the average bid for B will be double that of A. [SAME - Engineering - Singaporean]

19. Giving 2 points or giving 1 point is [are] the same. [SAME - Engineering - PRC Chinese]
20. 2 points each dollar only can be used for prize B.
1 points each dollar only can be used for prize A.
So no difference. [SAME - Engineering - PRC Chinese]
21. Since they offer the same ~~number~~ of prizes, there is no incentive in choosing A or B. So it will be the same. [SAME - Engineering - Singaporean]
22. The prizes offered are the same. The number of bid points given is not going to matter at all. More points, higher winning bid. Less points, less winning bids. [SAME - Chemical Engineering - Singaporean]
23. Because the prizes are bid by users freely, there is no fix [fixed] amount of bid points for a certain prize. So even for B which gives 2 points for every dollars, every users in B enjoy the same rate, so no one has any advantage when bidding with each others. Same goes to A. [SAME - Engineering - Malaysian]
24. The users are not competing with each other for the prizes. [SAME - Chemical Engineering - Singaporean]
25. The competition will be similar. Doesn't matter if 1 or 2 bid pt is allocated. [SAME - Environmental Engineering - Singaporean]
26. Bidders in same company. [SAME - Engineering - Singaporean]
27. For company B, everyone gets 2 bid points for every dollar's worth of transaction, hence the user in company B and A are almost on equal ground. [SAME - Electrical Engineering - Singaporean]
28. What is imp't [important] is the highest bidder. If u r [you are] willing to pay a high price for the imp't it does not matter the bid pt is what [what the bid pt is]. [SAME - Chemical Engineering - Singaporean]
29. Only the highest bidder will get the prize. So it does not make any difference whether the company issue 1 or 2 point for every dollar worth, the customer will eventually get the same prizes points. Outcome will be the same. [SAME - Chemical Engineering - Singaporean]
30. More pts given, increases the bidding pts of the prize. [SAME - Chemical Engineering - Singaporean]
31. (1) Prizes are equally rewarding. (2) For company B, 2 bid points is equivalent to 1 bid pt in company A in absolute value. [SAME - Chemical Engineering - Singaporean]
32. Since only the highest bidders get the prize, the bidders in company B although have more bids, at the same time the bids for the prize will also be raised. So the difficulty in bidding for the prize in A & B should be about the same. [SAME - Engineering - Malaysian]
33. Every bidder gains the same amount of pts. [points] for every dollar, so chances of successfully bidding prize is same. Be it 1 or 2 pts / dollar. [SAME - Electrical Engineering - Singaporean]
34. Both are giving pts & exchanging present [present?]. [SAME - Computer Science - Singaporean]
35. Bid points for company B are worth 1/2 of A's. So there isn't a difference. [SAME - Math - Singaporean]
36. It depends on availability of the prizes in market and the preference of people, i.e., choices they make. Since the person who bids with highest amount, and everyone starts from the same point. So it does not matter. [SAME - Chemistry - Malaysian]
37. I think the value of these two companies points are almost the same. [SAME - Electrical Engineering - PRC

Chinese]

38. Even though the users may think that company B gives more bid points compare [compared] to company A, However the increased in the bid pts of company B is applied to all the people. E.g., I get 2 pts for every dollar's worth of transaction, you'll also get 2 pts for every dollar transaction. So the chances of getting the prizes will be the same.

[SAME - Engineering - Singaporean]

39. Actually it all depends. There might have [be] other conditions for company B, like they need higher bid points for the prizes. [SAME - Chemistry - Malaysian]

ii. Money Illusion (Total N=57)

A. Direct Effect – Better Chance (N=33)

Having more bid points per transaction dollar increases the chance of a successful bid.

1. Most points. [B - Computing (with Business Focus) - Malaysian]

2. Since the conditions are almost the same (similar prizes, almost competitive companies), company B who (that) gives more bid points will allow consumers to select their prizes more readily since more pts are available. [B - Engineering - Singaporean]

3. More points mah. [B - Computing - Singaporean]

4. More bid points are offered by company B. Users to company B will accumulated [accumulate] the bid points faster and easier than those users to company A. [B - Computational Science specializing in Life Sciences - Singaporean]

5. B offers more points. [B - Engineering - Singaporean]

6. 2 pts. > 1 pt. [B - Engineering - Singaporean]

7. Because company B can give more bid points than company A which gives great attraction to customers. [B - Engineering - Myanmar]

8. More points more choice. [B - Math - PRC Chinese]

9. Higher chance to get the prizes. [B - Unspecified (but took Maths and Physics pre-University - Singaporean)]

10. In terms of success in attracting more users, company B certainly would be better especially since prizes offered are similar and not enough info on other factors affecting choice. [B - Electrical Engineering - Singaporean]

11. Obvious choice bec [because of] 2 bid pt. [B - Engineering - Singaporean]

12. More bid points. [B - Engineering - Singaporean]

13. More choices with the points. [B - Electrical Engineering - PRC Chinese]

14. Ppl [People] are likely to get more free gifts. [B - Life Science - PRC Chinese]

15. 2 bid point is [points are] more versatile. Consumer can choose to put 2 bid point [points] into 2 different prizes or both into one. Choices are always desirable. So company B will be more successful. [B - Engineering - Singaporean]

16. The more reward the merrier. [B - Electrical Engineering - PRC Chinese]

17. The higher bid points per dollar's worth of transaction offered by company B is more attractive. [B - Engineering - Singaporean]

18. Users will only consider their own advantage in this matter. [B - Computer Science - Singaporean]

19. Beneficial of additional 1 bid point for every dollar spent. [B - Computing - Singaporean]
20. Users get 2 bid points. [B - Engineering - Singaporean]
21. This is because the bid points offered per transaction is higher. [B - Environmental Engineering - Singaporean]
22. You gain double the price [prize?] for the same amount of money. ∴ you can change the bids for the prize at a faster time. [B - Environmental Engineering - Singaporean]
23. It provides more attractive conditions than company A. 2 bid points could be used to bid for a better prize than 1 bid point. [B - Engineering - Singaporean]
24. The users earn their bid pts much faster than company A and can achieved [achieve] attractive prizes more easily as compared to A. [B - Engineering - Singaporean]
25. The buyers earn bid pts much faster, hence it acts a [as a] good incentive to go to company B. [B - Engineering - Singaporean]
26. Sounds cheaper. [B - Engineering - PRC Chinese]
27. For each dollar spent, users get 2 reward points rather than one. So obviously, I would choose company B so that I can redeem my prize / gift as soon as possible. In addition, I might not even have to spend as much to accumulate the points. [B - Engineering - Malaysian]
28. Users get amount of points which is double of price of the prize. It attracts people to buy. [B - Engineering, PRC Chinese]
29. Obvious... [B - Engineering - Singaporean]
30. For every dollar's worth of transaction, company B is offering double the bid points that is offered in company A. Since as a consumer, company B offers me twice the bidding points with the same transaction, y [why] not? [B - Chemical Engineering - Singaporean]
31. It depends on the prizes offered. Company A may offer better quality prizes than company B. [SAME - Electrical Engineering - Malaysian]
32. Depends on the attractiveness of the prizes. Prize is not a major consideration in internet usage. Don't think this bid prize will have a major impact on sales figures. [SAME - Chemical Engineering - Singaporean]
33. Depends on what the customers want. If they want the prizes in A they go for A. If they want the prizes in B they'll go for B. [SAME - E-commerce (School of Computing) - Filipino]

Note: 31, 32, and 33 fail to notice that the question explicitly states that "the prizes offered by both companies are similar." However, one can infer from their written comments that if the students were to realize that the prizes offered by both companies are in fact similar, then for them, company B would weakly dominate company A.

B. Indirect Effect – Others May Be Susceptible (N=15)

The student is personally free from money illusion but believes that others are susceptible.

1. Although the differing amounts of bid points offered do not have much effect on the prize but for majority of cus-

- tomers are simply attracted to the higher quantity of points without giving it much in-depth thought. [B - Engineering - Malaysian]
2. 2 points sound more attractive from a consumer's point of views. ~~but in fact~~ [B - Engineering - PRC Chinese]
 3. Although the affects [effects] of 1 bid point or 2 is the same, but to their users, they will feel that they earn "more" points from company B. So as time goes on, more and more users will go to company B's website. [B - Computer Science - PRC Chinese]
 4. Actually it makes little difference. However, the higher numerical point will make users think it's more attractive. [B - Life Sciences - PRC Chinese]
 5. This is because the more bid points given by company B compare to company A though eventually only the highest bidders will get the prize. [B - Engineering - Malaysian]
 6. For it is definitely seems more attractive to have 2 pts for \$1 spend [spent], he will slightly be more successful because it will be seem [seen] by customers to be more beneficial at the first look. This can also be a gd [good] marketing pt. [B - Computer Engineering - Singaporean]
 7. Actually there will not be any real difference between the two offers, because only the highest bidder get the prize. However there will surely be people will be tricked into thinking company's B offer is better. Thus company B might get a slightly better response. [B - Engineering - Singaporean]
 8. Users alway [always] like more scores and they prefer to get a greater accumulation even though even one get the same high scores and the effects is [are] the same. [B - Engineering - PRC Chinese]
 9. I think effective marketing ("TWICE the value of our closest competitor!") is going to prevail over the fact that the value of the bid points given per dollar will be identical. [B - Biology (Life Sciences) - Indian]
 10. Although the competition among the consumers who receive bid points from the same company is the same, the consumers would think that they have advantages by receiving more points from company B. [B - Engineering - PRC Chinese]
 11. The amount of points are relatively the same from ppl [people] to ppl. Ex: you have 2. I also have 2. => we have equal chance. However, some customer might think that B is more attractive. [SAME - Computer Science - Vietnamese]
 12. Similar prizes, but company B offer [offers] more bid pts per dollar spent though the auction bid pts of company B might be more competitive, but the extra bid pts given is very appealing. [B - Mechanical Engineering - Malaysian]
 13. The average consumer and internet user will look at the offer on the superficial level, and will simply pick the one offering them more direct (1st level) benefit; i.e., more bid points. That is unless more factors are advertised ~~and used~~. [B - Computer Engineering - Singaporean]
 14. Company B gives its user two bid points, it looks more attractive as users may think that they get more bid points for every transaction. [B - Electrical Engineering - PRC Chinese]
 15. In my opinion, the consumers can only see the short benefit in front of them. Comparing two companies, the users will choose two-point company because they get more points from this company. [B - Engineering - PRC Chinese]

Note: 12, 13, 14, 15 are in fact a little ambiguous. It is unclear whether they are entirely free from the direct effect. They never state explicitly that the two are actually the same. However, my reading is that they are closer to the indirect effect and so I have grouped them under indirect effect.

C. Direct or Indirect Effect (N=6)

Giving more bid points per transaction dollar attracts more users. However, it is ambiguous whether the student is personally free from money illusion.

1. Many users will be attracted by the bid points given instead of the knowledge of the quantity or what kind of prizes offered. [B - Chemistry - Malaysian]
2. With same transaction concluded, users will be more attracted to company B offer. [B - Engineering - Myanmar]
3. Users will feel they got more of their money's worth, if they get 2 points for every dollar. [B - Life Science - Singaporean]
4. Two bid points seems [seem] to be more. [B - Engineering - PRC Chinese]
5. Most ppl [people] will prefer to have more bidding [bidding] points for every dollar of transaction. [B - Engineering - PRC Chinese]
6. Coz [Because] people have natural tendency to accumulate points / money. The more the better although they actually don't know what they'll get using these points or money. [B - Engineering - PRC Chinese]

D. People Prefer A Lower General Price Level (N=1)

Having more bid points per transaction dollar does not affect the winning bid but people simply prefer a lower bid price.

1. As the highest bidders will get the prize, A will give a greater possibilities for two or more bidders to get the same points, resulting in more people get the prize (For same purchases in money, A has less 2 times less (1/2) possibility in the number of bid point than B). [A - Life Sciences - PRC Chinese]

E. Do Not Care About Bidding (N=2)

The student does not care about the number of bid points because the probability of winning is very small, etc.

1. It depends on their other differences. Close competition \neq same services!! => got some differences, i.e., image, reliability. [SAME - Engineering - Malaysian]
2. Both companies would have their loyal customers. The point system doesn't seem to be able to attract users effectively. [SAME - Science - Malaysian]

iii. No Written Comments (N=18)

iv. Uninformative Comments (N=0)

Appendix Table B3: The Written Explanations for Store Choice

i. No Money Illusion (N=35)

Having more lucky draw tickets per \$10 purchase does not affect the probability of winning.

1. By giving two tickets instead of one, B gives a less/worse impression than A because the chance of winning is still the same but it has come up with a gimmick to trick people. [A - Engineering - Singaporean]
2. A starts one week earlier than B, so the base of consumers in A is larger than B. Moreover, although B gives two tickets to each consumer, the opportunity of lucky draws for each consumer getting the voucher is the same. [A - Computing - PRC Chinese]
3. Both has [have] the same prob [probability] of winning! [SAME - Chemical Engineering - Singaporean]
4. For every \$10 spent, there's a higher probability of winning the lucky the probability of winning the lucky draw is the same. [SAME - Engineering - Malaysian]
5. Though store B gives more ticket, only 20 lucky winners selected. [SAME - Computing - Indonesian]
6. Your ticket is double, total ticket is double too. [SAME - Math - PRC Chinese]
7. Assume same customers n.
The possibilities for customer in A is: $20/n$
The possibilities for customer in B is: $20/2n \times 2 = 20/n$. [SAME - Computing - PRC Chinese]
8. The ticket increases but the probability of winning still is the same. [SAME - Math - Vietnamese]
9. Everybody will get equal chance since everyone that spends \$10 at B will get 2 tickets. [SAME - Engineering - Singaporean]
10. Odds of winning same for both stores. [SAME - Engineering - Singaporean]
11. Same chance of winning in the lucky draw in store B as A. [SAME - Chemical Engineering - Singaporean]
12. No matter how many tickets issued for every \$10, the total number of vouchers is fixed. [SAME - Engineering - PRC Chinese]
13. Probability is similar. [SAME - Life Science - Malaysian]
14. $P(\text{winning}) = P(\text{no. of tickets} / \text{no. of tickets issued}) = \text{about the same for both shops. No change in price of goods.}$ [SAME - Engineering - Singaporean]
15. In A, you have one ticket out of 10,000 tickets.
In B, you have two ticket out of 20,000 tickets.
It doesn't make sence [sense?]. So get the ticket earlier from A. Better. [A - Engineering - PRC Chinese]
16. Because giving 2 tickets per person in B does not mean you have double chance of winning as size of tickets during draw also double. It won't attract more people than A. [SAME - Engineering - Singaporean]
17. Store B: everybody gets 2 tkts [tickets] per \$10 too, so % of tkts you're holding out of total # [number] remains the same. [SAME - Chemical Engineering - Singaporean]
18. Because not only me but other customers will also get an extra ticket for every \$10 spent. So the probability or possibility to win will be the same. [SAME - Building and Estate Management - Singaporean]

19. Because if I spend \$10 in store B, then the possibility of win the lucky draw is $2 \times 10 / 2n$, n is total sales. If I spend \$10 in store A, similarly, the result should be $1 \times 10 / n$. So actually the possibility is the same. If customers realize that, then both store [stores] attract same amount of customer. [SAME - Engineering - PRC Chinese]
20. Customers buying from store B will have an increased probability to be chosen in the lucky draw seemingly. But the total tickets issued is also doubled. Therefore the probability of winning a prize in store B is actually the same in store A. [SAME - Engineering - Malaysian]
21. That's because the chances to get the voucher from both stores are still the same. [SAME - Engineering - PRC Chinese]
22. Although store B gives 2 tickets, the total number of issued tickets will also increase, hence lowering one's chance of winning. [SAME - Chemical Engineering - Bruneian]
23. For every \$100,000 sale in the stores, tickets distributed by store B > than by store A. But since each person get 1 more ticket than in store A, then chance of winning the voucher is actually the same. [SAME - Chemical Engineering - PRC Chinese]
24. Store B may collect more tickets for lucky draw but knowing that the overall chance of winning is the same for both stores, consumer will find no difference between store A and store B. [SAME - Engineering - Singaporean]
25. The probability of getting selected from lucky draw is [the] same for A & B actually. So there is no difference between the policy of A & B. [SAME - Life Science - PRC Chinese]
26. Probability = $\frac{\text{No.ofluckytickets}}{\text{No.ofallthetickets}} \times n$.
 $P_A = \frac{20}{N} \times n$.
 $P_B = \frac{20}{2N} \times 2n = \frac{20}{N} \times n$. [SAME - Engineering - PRC Chinese]
27. For store B, if every consumer consumes the same amount, every one of them will get double amount of tickets. Hence the probability of being drawn is constant. [SAME - Electrical Engineering - PRC Chinese]
28. Because in the end, when the lucky draw is conducted, the ratio will work out to be the same, that is, your chance of winning in store A/B will be the same even if you spend \$10. Thus, it doesn't make a difference if you go store A/B. [SAME - Food Science - Singaporean]
29. The probability is the same and normally people go to the one which serves faster. [SAME - School of Computing - PRC Chinese]
30. The probability of being a winner is the same for A and B. [SAME - Computer Science - PRC Chinese]
31. For A: the total amount of the voucher is worth is $20 \times 100 = 2 \times 10^3$; the percentage of winning for the customer is: $\frac{20}{100000/10} = \frac{20}{10000} = 1/500$
For B: the total amount is the same, but percentage is: $\frac{20}{2 \times 100000/10} \times 2 = 1/500$
∴ everything is the same for both stores. [SAME - Engineering - PRC Chinese]
32. Based on memoryless property. No difference for both store [stores] A and B in their offers. [SAME - Engineering - Malaysian]
33. More tickets issued by store B per \$10 spent meant that the total number of tickets held by store B will be approx. double of store A. However, the ratio of tickets earned per \$10 to the ratio [number] of tickets total will be the same.

This of course, assumes that the consumers are of logical thinking and realizes [realize] that the chances of winning is the same. [SAME - Engineering - Singaporean]

34. During the following week when B is still taking its new policy, A is more attractive, because the ticket of B in this week will stand less probability to win the prize. However, in the end, A and B are the same, because the probability to win prize for each \$10 spent is the same. [SAME - Engineering - PRC Chinese]

35. I do not believe this lucky draw competition will make any difference to the customers. Since both stores are holding lucky draws, customers have more choices and chances to win the same prizes. I believe they appreciate the competition but it will not give them the incentive to spend more in any of the stores, though overall sales will increase. [SAME - Computing - Singaporean]

ii. Money Illusion (Total N = 80)

A. Direct Effect I – Better Chance (N=37)

Having more lucky draw tickets per \$10 purchase increases the probability of winning.

1. The chances of winning the lucky draw at store B is greater. Customers would patronize more at store B. [B - Engineering - Malaysian]
2. 2 winning chances / \$10 spent → higher chance. [B - Engineering - Singaporean]
3. More incentives for customers to buy, as one will get more lucky tickets from B, ∴ ↑ chances of winning. [B - Engineering - Singaporean]
4. B gives 2 tickets. [B - Computing - Singaporean]
5. From the consumers' point of view, store B will have a higher chance of winning the lucky draw. [B - Chemistry - Singaporean]
6. The customers will not take into account who announces it first. The customer will be more interested in the gains, i.e., two tickets for \$10. [B - Information Systems - Singaporean]
7. Customers will want more chance to win the voucher. [B - Computing - Singaporean]
8. Since B offers a more attractive offer, with respect to the doubled vouchers, compared to that of A. [B - Computing - Singaporean]
9. Customer will compare between store [stores] A and B and see which store give [gives] them a larger chance to win. Store B give [gives]two tickets instead of one for store A. Customers will feel that winning the lucky draw from store B has a higher chance. [B - Chemical Engineering - Singaporean]
10. Because store B gives out more lucky draw tickets for the same amount spent. [B - Engineering - Malaysian]
11. If store B gives more incentives, provided all other conditions for store A & B are same, customers would obviously prefer the one with more incentives for them... at least I would! [B - Business Focus from School of Computing - Indian]
12. Higher incentive and greater value-return attracts more consumers. [B - Business Focus - Singaporean]
13. Value for money. [B - Engineering - Pakistani]
14. Since the customers can get same stuff at both place at same price, they rather get 2 tickets for the same amt spent

- to maximize their chances of winning. [B - Engineering - Singaporean]
15. When store B compete with store A with the same condition, the demand to buy in store A and B will be the same. However, the condition of promotion of store B is improved after a week, it will gain more customers after its announcement. Therefore, B will attract more customers in the end. [B - Computing - Vietnamese]
 16. There is a higher chance of being chosen in the lucky draw when 2 tickets are given for every \$10 spent. [B - Life Science - Malaysian]
 17. The probability for consumer of store B to get a shopping voucher is higher than before. [B - Engineering - PRC Chinese]
 18. Store B gives more tickets. [B - Engineering - Singaporean]
 19. Since the stores are similar in other aspects other than the lucky draw, customers from A might be attracted to B now that they have a higher chance of winning the lucky draw with the same amount spent and hence greater incentive to shop at B. [B - Chemical Engineering - Singaporean]
 20. Human's nature of greed. [B - Engineering - Singaporean]
 21. More chances of winning. [B - Engineering - Malaysian]
 22. Give out more tickets with lower price can get higher chance within budget. [B - Engineering - PRC Chinese]
 23. Create a higher chances of winning for customer. [B - Management - Malaysian]
 24. More incentives. [B - Unspecified (but subjects taken pre-university were math, chemistry, biology, and physics) - Singaporean]
 25. Store B has more incentives. [B - Chemical Engineering - Singaporean]
 26. As a consumer, I would go to store B. [B - Engineering - Singaporean]
 27. Customers will be attracted to store B since there are more tickets given out. [B - Chemical Engineering - Singaporean]
 28. It depends on the income mix of the neighborhood. [B - Engineering - Singaporean]
 29. Of course store B lah! More incentives! [B - Chemical Engineering - Malaysian]
 30. Consumers will usually go for the best deals! [B - Pharmacy - Malaysian]
 31. Higher incentive for shopping in shop B as each customer has a higher chance of winning in the lucky draw. [B - Engineering - Malaysian]
 32. (1) People are greedy.
(2) The "higher chance" of getting cash. [B - Engineering - Malaysian]
 33. Each customer has 2 two chances of participating in the lucky draw in store B for the same amount of money (\$10) spent. [B - Chemical Engineering - Singaporean]
 34. Higher chance to get the voucher. [B - Applied Chemistry - Indonesian]
 35. Get more chance to win the lucky draw. [B - Engineering - PRC Chinese]
 36. Store A provides customers a higher incentive for buying the goods but not the chance of winning the lucky draw. [B - Information Systems - Singaporean]
 37. For those who goes shops less will choose A because of higher possibility to get lucky draw due to less ticket

distributed. For those who goes shops a lot will choose B because of higher chance of winning by getting more tickets.
[SAME - Engineering - Malaysian]

Note: 37 can also be classified under B. Direct Effect II – Worse Chance.

B. Direct Effect II – Worse Chance (N=15)

Having more lucky draw tickets per \$10 purchase lowers the probability of winning.

1. Store B chooses 20 lucky one [ones] from more tickets than store A. [A - Life Science - PRC Chinese]
2. For every \$10 spend [spent], store B gives two tickets, however store B did not increase the no. of lucky winners, therefore the chance of getting a prize is lowered as the total number of ticket increases. Hence store A will attract more customers as all other conditions remain constant, store A gives a higher chance of winning. [A - Engineering - PRC Chinese]
3. Because after the sale reach [reaches] \$100000, then lucky draw take [takes] place, giving more tickets for every \$10 spend [spent] only ↑ the number of lucky drawers, the probability for getting the prize by an individual actually ↓. [A - Statistics - PRC Chinese]
4. Because the customers will think that for store A, it's easier for them to win the lucky draw. They'll go to store A. [A - Architecture - PRC Chinese]
5. ~~People may prefer to get two tickets~~ More people will get tickets from store A. [A - Applied Math - PRC Chinese]
6. For the store B, the chance for every customer is less. [A - Math - PRC Chinese]
7. The chance seems higher. [A - Life Sciences - PRC Chinese]
8. With less tickets issued, the more chances for each ticket, more chances to win. [A - Electrical Engineering - PRC Chinese]
9. The chance is larger in A since the total number of tickets is small. [A - Engineering - PRC Chinese]
10. The probability for winning the lucky draw with store A is higher than that of store B. This is due to the fact that same number of lucky winners, but store B issue double the number of tickets than that of store A. [A - Computational Finance - PRC Chinese]
11. Because customers at store A have a higher chance of winning. [A - Computational Finance - PRC Chinese]
12. It appears to be more appealing for customers (though they may have a lesser chance of winning). [B - Engineering - Malaysian]
13. In fact, the change [chance] to get a lucky draw in B is less than that in A. However, not everyone is a mathematicist [mathematician]. So most can't realize this. So they will follow their pervative [?] feel and go to store B. [B - Engineering - PRC Chinese]
14. With more tickets being given out, the probability of winning is less. With less tickets being given out, higher probability of winning the lucky draw. Thus the total probability probability of winning in either A or B would be the same and so the number of customers would be almost the same. [SAME - Engineering - Singaporean]

15. Initially, there may be an increase of customers in store B. But this results in customers of A having more probability of winning draws. Thus, equilibrium will be reached eventually as the prob. of winning in each store will be the same.

B - ↑ P with 2 tickets

A - ↑ P with less competition [SAME - Engineering - Singaporean]

C. Direct Effect III – The Loss of Goodwill (N=0)

The store that violates an implicit agreement loses goodwill. It will be shunned even if the store's offer appears more attractive.

D. Direct Effect IV – Do Not Care About Lucky Draw (N=5)

Even though having more lucky draw tickets per \$10 purchase appears more attractive, the consumers simply do not care about lucky draw because the probability of winning is very small.

1. People will have the impression they stand a better chance of getting a draw at store B, hence they will shop there. But personally, I don't really care for lucky draws. [B - Chemical Engineering - Singaporean]
2. I don't [am not] interested in the lucky draw stuff as I don't think I am such lucky person. I will just buy things I want in the nearest store at affordable price. Price and quality of the goods interested me more. [SAME - Engineering - PRC Chinese]
3. The probability of winning the lucky draw is still too low even if the number of tickets for every \$10 is doubled and therefore is not a sufficient incentive for customers who initially preferred A to make a change. [SAME - Life Science - Singaporean]
4. The probability of getting the vouchers is so low, it's negligible. [SAME - Engineering - Malaysian]
5. Customer loyalty. [SAME - Life Science - PRC Chinese]

E. Indirect Effect II – Others May Be Susceptible (N=23)

The student is personally illusion free but believes that others are susceptible to money illusion.

1. The prob. [problem], no doubt, is the same in my opinions. However, giving 2 tickets gives an impression that an individual stands a higher chance of nailing the lucky draw prizes. Housewives are naturally attracted to lucky draws. [B - Engineering - Singaporean]
2. Pple [People] will be attracted to shop at shop B as they will think that they will have higher chances of winning. Even though if no. of people shopping at each shop remains the same, the probability of winning will remain the same. [B - Chemical Engineering - Singaporean]
3. Two tickets > one ticket though the possibility of winning is the same. [B - Computing - PRC Chinese]
4. Store B will attract more customers in the beginning because they think if they get more tickets for every purchase. But this doesn't mean they have higher chance of winning (more tickets from every customer) when customers realize this, store A will start to attract more customers than store B. (no of winners at the end of the day is the same). [SAME

- Engineering - Indonesian]

5. When store B increases the number of tickets to two, it is same for all the customers. As a result, the chance of winning at the lucky-draw is still equal as compared to store A when it uses one lucky draw. Initially, people will be attracted to store B when they hear there are two tickets. As a result, it attract more customers to go store B. After then, the customers might realize the probability is the same, and since there are greater customers in store B, the chance of winning is lower, they would go back to store A again. Hence, both stores will attract about the same number of customers. [SAME - Life Science - Singaporean]

6. People may feel they stand for more chance if they hold more tickets. [B - unspecified - PRC Chinese]

7. Store B offers two tickets for every \$10 spent. Consumers will think they have double the chances to win the lucky prizes. However, customers failed to realize that despite [although] they have more tickets, the number of prizes is still the same. Every customer of store B will get two tickets for every \$10 spent. Hence, every customer of store B has the equal chance to win the same number of prize. [B - Engineering - Singaporean]

8. It should be the same. Both stores will earn \$100k when promotion over. Giving every person 2 tickets gives them the same chance to win as 1 ticket each, because the customers compete, not the stores. B does not give out more prizes. Even though more customers attracted to B (for wrong reasons) B still won't earn more as promotion will be over faster. [SAME - Computer Science - Singaporean]

9. In fact, the chances to win the money is the same for store A and B. There is actually NO DIFFERENCE between the two plans. But people always assume that more tickets = more chances to win. (They are not mathematician anyway). So most of them will go to store B. And in this way, more customers will be attracted to B. [B - Engineering - PRC Chinese]

10. Although probability of winning will be the same for store A & B but customer will not consider [think] too much. [B - Chemical Engineering - Singaporean]

11. Since each customer gets 1 ticket in store A vs. 2 tickets in store B (i.e., no preferential treatment for any customer) THEREFORE THE PROBABILITY OF GETTING THE VOUCHER IS THE SAME IN BOTH STORES. HOWEVER, IN CASE THE CUSTOMER THINKS THAT LARGER NUMBER OF TICKETS GIVE HIM GREATER CHANCE OF WINNING, THEN HIGHER NUMBER WILL GO TO STORE B. [B (if customer is not logical), SAME (Assuming customers are rational) - Engineering - Indian]

12. The consumers will be drawn by the offer of more tickets per \$10 spent offered by store B. [B - Environmental Engineering - Singaporean]

13. Store B is giving 2 tickets as compared to 1 given by store A. However, chances of winning will be the same. Instead, more tickets should be given when more is spent. [B - Engineering - Singaporean]

14. Because most people will just go for whichever store that they think give them a better chance on the first thought. [B - Engineering - Singaporean]

15. People would have the mentality that they will increase their chances of winning should they have more lucky draw tickets. Thus more would patronize store B. [B - Chemical Engineering - Singaporean]

16. Because customer gets feeling that he has a greater chance of winning. [B - Engineering - Pakistani]

17. In the first place, B will attract more. In the end, for the same amount of purchase, customers ~~are more easily will~~ stand a higher chance to win a draw. [A - Electrical Engineering - PRC Chinese]

18. Store B's offer will sound more attractive to ordinary consumer. [B - Information Systems - Singaporean]

19. People will be attracted to the 2 tickets idea => more customers. [B - Engineering - Singaporean]

20. This is because the consumer would be more eager to shop there although not all consumer do this. [B - Food Science and Technology - Indonesian]

21. Customers will believe they have a higher chance to be selected in the lucky draw for the same amount they are spending, so they will go to store B as the two stores are almost identical in every other aspects. [B - Applied Mathematics and Statistics - PRC Chinese]

The following comments are somewhat different from the above comments. These comments argue that while the probability of winning and the number of prizes may be the same, the maximum number of prizes that the customers can *potentially* win is higher in the store that gives more lucky draw tickets.

22. The probability of a consumer being chosen as a winner is the same. (However for B, a consumer has a chance to win 2 prizes, thus may attract more ppl [people]) [SAME - Engineering - Singaporean]

23. For example, person C spent \$100 to get 10 ticket from A.

Person D spent \$100 to get 20 ticket from B.

So both stores A and B will have 20 lucky winners.

C person maximum will get 10×100 (means his 10 tickets are all selected) in A.

D person maximum will get 20×100 (his tickets are all selected) in B. [B - Engineering - PRC Chinese]

iii. No Written Comments (N=15)

iv. Uninformative Comments (N=4)