



Economics Versus Philosophy: A Comparison of Dishonest Behavior

Bachelor Thesis

Economie en Bedrijfseconomie

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1. Introduction

Standard economic models have always worked with the assumption that people are rational utility maximizers. This assumption resulted in models that assumed economic agents to only care about their own gains and also that they were perfectly capable of selecting out of all possible options the option that would maximize their gains. These people would only forgo lying to increase their material benefit if this lying would result in strategic or reputational deficits that exceed the gains of lying.

It is possible to find real world examples of people using dishonesty with the intent to enrich themselves by hurting other people. A famous example would be the Bernie Madoff Ponzi scheme where Madoff made money by lying about investing, but instead setting up a Ponzi scheme. Studies have also found that the degree of dishonesty relates to the amount of money can be gained and the chance of getting caught (Becker & Landes, 1974). This implies that people make a conscious economic decision when weighing the benefits of the lie against the costs of getting caught.

However, this type of behavior does not seem to be the norm in society. More recent research has found that people are not only driven by this economic calculation model. People take in to account the amount of harm they cause to others independent of whether it is anonymized and there is no possibility for revenge by the person they hurt (Gneezy, 2005). People also want to view themselves as honest, which causes them to be only dishonest for economic gain up to some self-selected threshold (Mazar, Amir, & Ariely, 2008).

These outcomes indicate that people do make an economic cost-benefit analysis when trying to decide whether to lie for personal gain. However they also take into account personal moral considerations by including harm caused to others and wanting to hold the self-concept of being moral. The outcome of these considerations is very personal and thus vary between individuals. A systematic overview of dishonesty in economic and psychology literature found a wide variety of findings between different articles which they partially attributed towards the various sample groups used (Rosenbaum, Billinger, & Stieglitz, 2014). Twenty of the 58 studies taken in to

account did not use students, while twenty-nine of the studies mention using students without specifying the field of their study. Only two of the studies compare two different fields of study with each other, and they get mixed results. One study in Switzerland found no significant difference between economy and psychology students (Gibson, Tanner, & Wagner, 2013), while a different study in England did find a significant difference between economy and psychology students (Lewis, et al., 2012). These articles show that a lot of studies don't take in to account the effect of field of study on the results, while there are mixed results about whether they should do this. If it is true that your field of study influences your attitude towards dishonesty than this could affect the robustness of the results obtained in the studies not mentioning the study fields of their sample group and it will also influence future studies by requiring them to test for the field of study within its participants.

This article will take a different approach to finding whether there is a difference between fields of study by comparing economics students with philosophy students instead of psychology students. Both economy and psychology students learn about cost-benefit analyses and research setups trying to find dishonesty during their studies, but they do not have any specific teaching in the morality of dishonesty. Philosophy students, however, do not have any education in cost-benefit analyses and research setups trying to find dishonesty during their studies, but they do have teaching about the morality of dishonesty. There is thus both a difference between economics and philosophy students in their knowledge about the kind of research and the underlying academic knowledge, which is not present between economics and psychology students. This difference should make it more likely to find significant evidence if there is a difference between different fields of study in their attitude towards dishonesty.

2. Theory

To find a relationship between dishonesty and student research, it should first be clear what is meant by these terms. This part will look at how dishonesty is used in the standard economic model and what behavioral scientists have tried to add to this model. I will also show how researchers have used students in their research.

2.1 Standard Economic Model

John Stuart Mill is generally regarded as the first economist to develop the idea that all agents act as rational utility maximizers, by later writers referred to as the homo economicus. He describes human behavior when making choices as rational and utility maximizing which is done by maximizing economic profit (Mill, 1863). Standard economic models (SEM) use this idea to describe how people act in situations where they can gain a personal benefit by being dishonest. They will look at the costs of getting caught and weigh this against the benefits. This theory would thus suggest that when considering to be dishonest to gain personal benefits someone would only consider three things. The benefits when not caught, the chance of getting caught and the punishment of getting caught. They will then estimate the utility they derive from the benefits and subtract the disutility they suffer from getting caught given the chance they get caught. If this estimation is positive they will do it, if not they won't (Mazar, Amir, & Ariely, 2008). The idea of utility maximization is fully modeled by John von Neumann and Oskar Morgenstern in 1944 (Neumann von & Morgenstern, 1944). To get to this model, they formulated five axioms. These were the Completeness, Transitivity, Continuity, Monotonicity and Substitution axioms. The completeness axiom states that someone can always rank a set of options as either better, worse or the same as some other set of options: $A \succsim B$ or $B \succsim A$ or both at the same time. The transitivity axiom states that someone logically arranges his set of options. If he prefers A over B and B over C then he will also prefer A over C.

If $A \succsim B \succsim C$ then $\exists \lambda \in [0,1]$ such that $B \sim \lambda A + (1 - \lambda)C$ The continuity axiom states that there are no gaps in someone's preferences. If someone prefers point A on a preference curve over point B, then points close to A will also be preferred over B. If $A \succ B$, then $A \succ B$

The monotonicity axiom states that a group of products (A) that contains the same products plus at least one extra of one of the products as a group of products (B) then A is preferred over B.

The substitution axiom states that if a group of products (A) is preferred over a group of products (B) then A is also preferred over B if a product is added to both A and B. If $A \succ B$ then $A+C \succ B+C$ (Policonomics, 2017). This model has been used for a long time in economic

research without much criticism of the axioms. However over time more examples were found that questioned the validity of the axioms.

2.2 Behavioral Insights

2.2.1 Thought experiments

The first method how these axioms were questioned was by providing thought experiments where most people made a non-utility-maximizing choice. The first to do this was Maurice Allais. He came up with what we now call the Allais paradox. He gave two sets of AB-gambles¹ to the well-known economist Leonard Jimmie Savage over lunch at a conference in 1952 in Paris. According to the SEM to be consistent with the substitution axiom if someone chooses A in the first gamble then someone should also choose A in the second gamble and someone who chooses B in the first gamble should also choose B in the second gamble. However Savage chose 1A and 2B and later research has shown that most people would choose these options (Allais & Hagen, Expected Utility Hypotheses and the Allais Paradox, 1979). However when Allais published his results, they were not universally accepted. The editor of *Econometrica* in which he published his results even put in an editor's note stating that the results were subtle and that there was no general agreement on the implications of the results (Allais, 1953). The second famous example that showed shortcomings in the SEM was given by Ellsberg in 1961. In his article he described a gamble² that showed that people violate the substitution axiom, because they have a preference for known chances over uncertain chances. In this paradox people switch from choosing 1A to 2B, even though 1A and 2A, and 1B and 2B only differ in the same chance (drawing the yellow ball) being added (Ellsberg, 1961).

2.2.2 Prospect theory

These examples paved the way for more research by economists and psychologists in to the validity of the SEM. This new research distinguished itself by not only looking for situations in which people didn't behave rational, but also trying to come up with whole new economic

¹ The choices were: 1. A: 100% 100 million B: 10% 500 million; 89% 100 million; 1% 0 and
 2. A: 11% 100 million; 89% 0 B: 10% 500 million; 90% 0

² The choices here: Suppose there is an urn with 30 red balls and 60 balls that are either black or yellow.
 1. A: 100 if you draw a red ball B: 100 if you draw a black ball
 2. A: 100 if you draw a red or yellow ball B: 100 if you draw a yellow or black ball

models that could incorporate these paradoxes in the established models. This new field of research became known as behavioral economics. One of the milestones in this new field was the modelling of Prospect Theory by Kahneman and Tversky (Kahneman & Tversky, 1979). This theory is able to explain all phenomena that the SEM can explain and on top of that is also able to explain the paradoxes that were found in behavioral research. The theory included reference dependence, loss aversion, nonlinear probability weighting and diminishing sensitivity to gains and losses. Reference dependence is the phenomena that people do not evaluate an outcome on the basis of the absolute result, but on the basis of their reference point. When someone hears that he gets a raise of 10% he will be very happy, because his old wage is the reference point in the comparison with his new wage and thus concludes that there is a gain. However if he finds out that all his coworkers get a raise of 20% at the same time he will see his colleagues raise as reference point and thus concludes that he suffered a loss by only gaining 10%. Loss aversion states that people suffer around twice as much from losing something than they gain by obtaining it. Loss aversion helps explain why most people are risk averse. Because any 50%/50% gamble (a coin toss for example) must have a win/loss ratio of more than 2/1 in order for people to feel like a 1/1 ratio. Nonlinear probability weighting says that people overestimate small odds and underestimate large odds. The difference between 0.00001% and 0.001% is treated as no difference. This helps explain why people play lotteries even though a rational cost/benefit-analysis would be harmful for them. Diminishing sensitivity to gains and losses states that gains and losses that are in absolute terms further from the reference point have a lower marginal effect on perceived winnings/losses. This helps explain why people will exert effort and invest time to go to a different store to get a 10 euros calculator 1 euro cheaper, but when buying a 200.000 euros house they will spend a couple thousand extra on furniture and paint without much thought.

2.2.3 Selfishness

Prospect theory kicked off lots of research in the field of behavioral economics in the late 20th and early 21st century. One of the lines of research focused on the question whether people always acted as complete selfish utility maximizing actors. One of the ways how this was done was by observing how people played games that gave the opportunity to act selfish. One of the

first games used for this was the ultimatum game put forward by Güth et al. in 1982 (Güth, Schmittberger, & Schwarze, 1982). This game consists of two players. One is the proposer and the other is the responder. The proposer is given a certain amount of money (for instance 10 euros) by the researcher. The proposer then has to propose a division of the 10 euros between him and the responder (for example 8 euros for himself and 2 euros for the responder). After he hears the proposed division, the responder has two options. He can either accept the proposed division at which point the game ends by paying the proposed amounts to the players (in the example the proposer walks away with 8 euros and the responder with 2 euros) or he can reject the proposed division at which point the game ends with both players receiving nothing. The SEM assumes both players would act completely rational. If this were the case then both players would only care about their own monetary outcome and they would know this of each other. In this scenario the proposer knows that the responder will accept any offer above nothing, because if the responder would reject this he would receive nothing instead of the rejected amount of money. Using this knowledge the proposer will offer the lowest amount possible (in the example 1 cent and keep the other 9.99 euros). The responder will accept the offer because he will value the 1 cent over getting nothing. However when Güth et al. played the game in the lab they found that responders did not always accept positive amounts proposed and also that most proposers did not propose the lowest amount possible. They found that most proposers offered a split in which they kept between 80 and 50 percent. Most of these offers were accepted, but some of the lower end offers got rejected by the responder. After Güth et al. many ultimatum games have been studied and a literature review in 2015 by Mohammad Mousazadeh and Milad Izadkhah found that these studies showed that players consistently behaved in this way (Mousazadeh & Izadkhah, 2015). The results show that responders don't follow the selfish utility maximizing rules that are dictated by the SEM. Instead of that responders expect to divide the money in a fair way. It is not universally accepted what this fair division exactly is. For most responders this means that the proposer may give himself more than . However around the 70% mark some responders will forgo some of their own utility to punish a proposer for not giving a more equal division, because they deem the offer unfair. The ultimatum game thus shows that at least the responders will diminish their own utility in order

to punish a proposer for not being fair. Proposers also don't propose the SEM optimal amount, but from the results of the ultimatum game you cannot tell whether they do this because they also think it is fair to give the responder more or because they anticipate rejections and thus optimize by offering more money to get a higher chance of getting accepted.

To test this, a variant of the ultimatum game was proposed by Kahneman et al. in 1986 (Kahneman, Knetsch, & Thaler, 1986) which was later refined and simplified by Forsythe et al. (Forsythe, Horowitz, Savin, & Sefton, 1994). In this dictator game there are still two players and the game is also started with one player getting a certain amount of money from the researcher to divide. However, in this game there is no option for the second player to reject the division. The game only consists of the proposer deciding how to divide the money between himself and the other player and this division is then immediately finalized. Again the SEM would predict a completely selfish player. In this case that would mean that the proposer would just keep all of the money. However Forsythe et al. found that most proposers did give a portion of their allocated money to the other player. This result is also backed up by a meta-analysis by Christoph Engel in 2011 that looked at 129 studies that used the dictator game (Engel, 2011). The research from the dictator games thus finds that the proposers also don't find the SEM solution to be fair. The results of both games show that people don't follow the selfish utility maximizing rules that are dictated by the SEM. Instead people expect to divide the money in a fair way.

2.2.4 Dishonesty

These games showed that not only economic rules, but also social norms play a role when people interact with other people in economic situations. This section will give an overview of the effect this insight had on the behavioral research in to dishonesty in order to gain personal benefits. As shown in section in section 2.1 the SEM will have agents only consider three things when deciding whether to act dishonestly in order to gain personal benefits. The benefits when not caught, the chance of getting caught and the punishment of getting caught.

An elaborate study done by Henrich et al. between cultures all over the world found that there were big differences in how they played the games based on how economically organized they were and how important cooperation was in their day to day life. In their article they show that

cultural norms and habits are crucial for understanding how people act in economic situations (Henrich, et al., 2001). One norm that is found in all cultures is the norm to be honest. A report by the Josephson Institute of Ethics from 2006 found that 98% of high school students said that “It’s important for me to be a person with good character.”, that also 98% believed that “honesty and trust are essential in personal relationships” and that 83% said “It’s not worth it to lie or cheat because it hurts your character.” (Josephson Institute of Ethics, 2006). People have internalized this norm and because of that people will try to live by it even if there are no external repercussions. If someone doesn’t comply with his internal standard of honesty he will have to negatively update his self-concept. And vice versa if someone does live by his internal standard he retains his positive self-concept. Because it is desirable to keep a positive self-concept someone will take actions that result in negative utility if that is necessary to retain it.

Around 2008 a sudden rise of research was sparked in the economic analysis of dishonesty. This increase has been attributed to the research of Mazar et al. which explained how people incorporated both economic gains and self-concept in their consideration and used that to find an equilibrium by constructing a theory of self-concept maintenance (Rosenbaum, Billinger, & Stieglitz, 2014). Their research focused on two mechanisms: categorization and attention devoted to one’s own moral standards. Categorization states that for certain types of actions and magnitudes of dishonesty, people can categorize their actions into more compatible terms and find rationalizations for their actions. This way people can be dishonest without letting it affect their self-concept. For example, in most workplaces pens can be taken freely from a stash provided by the employer. An employee who takes an extra pen to use at home for non-work-related activities is not judged to be stealing by most people. But when an employee would take 10 cents out of the cash register to buy a pen most people would judge that as stealing. This suggests that certain actions can be categorized easier in order to not affect self-concept. However this mechanism has its limits. Taking one pen from the office will not feel like stealing, but when you start to take them every day or take 20 pens at the same time this will change and it will no longer be possible to “trick yourself in to believing you’re doing nothing wrong.” The second mechanism is the attention devoted to one’s own moral standards. This mechanism states that if people are primed to think about their internal value system they will be more

likely to act in accordance with it. A student who thinks cheating on an exam is wrong will be less likely to do so if he has to sign a piece of article stating that he won't cheat at the start of the exam (Mazar, Amir, & Ariely, 2008).

After this theory of self-concept maintenance was established research focused more on finding subgroups that were more/less likely to be dishonest. This research shows that honesty does not seem to be an inherent fixed trait. A literature review by Rosenbaum et al. showed which relevant groups were more/less likely to be dishonest. They found that men and economists were more likely to be dishonest, but could not find evidence that income or age had an influence. The effect of stake size showed mixed results. This could be explained by that it has diametrical effects on the two main inputs of the self-concept maintenance theory. Raising the stakes does raise the incentive, but it also makes it harder to categorize it making it more likely to affect the self-concept (Rosenbaum, Billinger, & Stieglitz, 2014).

2.3 Student Research

Academic research has always relied on students to do research on. For professors it is easy to mandate their class to participate in experiments and even non-teaching researchers find it easy to recruit students on campus because they are often available during office hours and they don't make a lot of money making it more probable that they will participate with low incentives. Of the articles used in the literature review by Rosenbaum et al. more than used students as research subjects (Rosenbaum, Billinger, & Stieglitz, 2014). There has been research done that looked at whether students are representative research subjects. A review of these studies done by Fréchette found that most studies showed no difference between students and professionals (Fréchette, 2015). There has also been research done that looked at whether economics students are different from other students in regard to acting more economically rational in experiments. One of the first articles on this subject by Marwell and Ames showed that given the opportunity economics students were more likely to free ride (Marwell & Ames, 1981). Carter and Irons and Kahneman et al. showed that economics students were less cooperative, altruistic and trusting than other students when playing an ultimatum game (Carter & Irons, 1991) (Kahneman, Knetsch, & Thaler, 1986). On the topic of economic dishonesty there have been two articles that compared two sets of students. One study in Switzerland found no

significant difference between economics and psychology students (Gibson, Tanner, & Wagner, 2013), while a different study in England did find a significant difference between economics and psychology students (Lewis, et al., 2012). A limitation of both articles is that they compared economy students with psychology students. Since psychology also has classes about experimental designs and rationality. They have thus also learned what the 'correct' answers are in these kind of experiments. The question whether economics students are different from other students with regard to economic dishonesty remains unclear.

3. Testing Framework

This research will focus on differences between students of different disciplines. By testing if there is a difference between economics and philosophy students this study will address whether studies need to distinguish between students of different disciplines when selecting research subjects in honesty research. The research question of this thesis is:

'There is a difference between economics and philosophy students when given the opportunity to act dishonest for economic gain'

3.1 Hypotheses

This research will attempt to answer the research question by answering four hypotheses.

Hypothesis 1: *'Economics students are not more dishonest when self-reporting the number of coins flipped tails when flipping one coin with a reward of one ticket if tails'*.

Hypothesis 2: *'Economics students are not more dishonest when self-reporting the number of coins flipped tails when flipping one coin when the reward is increased to four tickets if tails'*.

Hypothesis 3: *'Economics students are not more dishonest when self-reporting the number of coins flipped tails when flipping four coins with a reward of one ticket for every tails'*.

Hypothesis 4: *'Economics students are not more dishonest when self-reporting the number of coins flipped tails when flipping four coins when the reward is increased to four tickets for every tails'*.

These hypotheses are constructed on the basis of the in the theory section discussed theory of self-concept maintenance (Mazar, Amir, & Ariely, 2008). This theory states that whether people will be dishonest depends on the magnitude of the reward and if they can keep their self-concept as an honest person. These four hypotheses measure the four different mixes of reward and self-concept maintenance, where one ticket stands for a low reward and four tickets for a high reward, and flipping one coin for low opportunity to keep self-concept when being dishonest and flipping four coins for high opportunity to keep self-concept when being dishonest. That four tickets a higher reward is than one ticket is self-explanatory. That four flips give higher opportunity to be dishonest while keeping your self-concept is because it gives the opportunity to be a bit dishonest by only changing one of four coins instead of changing the only coin that you flipped. Hypothesis 1 measures if there is a difference with low reward and low opportunity to keep self-concept when being dishonest. Hypothesis 2 measures if there is a difference with high reward and low opportunity to keep self-concept when being dishonest. Hypothesis 3 measures if there is a difference with low reward and high opportunity to keep self-concept when being dishonest. Hypothesis 4 measures if there is a difference with high reward and high opportunity to keep self-concept when being dishonest. Hypothesis 4 will have the highest chance of showing a difference on the basis of the literature.

3.2 Survey

To obtain the data required to test the hypotheses of this thesis, a survey will be conducted amongst economics and philosophy students. The survey will provide the data to conclude whether there is reason to reject the hypotheses. The study was created by using Qualtrics and distributed using email and Facebook. The survey was based on the survey used by Abeler et al. (Abeler, Becker, & Falk, 2014). It uses the reporting of the outcome of coin flips as basis. People are asked to observe the outcome of a coin flip and report whether it was heads or tails. If they report the outcome as tails than they will receive a certain amount of lottery tickets which give a chance of winning a gift card. This set-up incentivizes dishonesty, because reporting tails is always better than heads and there is no way for the researcher to know the result of the coin toss. The survey starts with instructions for the participants. This consists of what they will have

to do during the experiment and how they can get the reward. After that the participants will get the following questions:

- In this case you will have to flip one coin and you will receive one ticket if it comes up tails and zero tickets if it comes up heads.
- In this case you will have to flip one coin and you will receive four tickets if it comes up tails and zero tickets if it comes up heads.
- In this case you will have to flip 4 four coins and you will receive one ticket for every tails that comes up and zero tickets for every heads that comes up.
- In this case you will have to flip four coins and you will receive four tickets for every tails that comes up and zero tickets for every heads that comes up.

The flipping of the coins is done by going to a site which randomly shows coins to be heads or tails. <https://www.random.org/coins/?num=4&cur=60-eur.netherlands-1euro>

After that the participant is asked to give the following personal details:

- Sex
- Age
- Primary field of study
- Whether they identify as religious
- Income
- Email on which they want to receive their gift card if they win

4. Results

A total of 88 respondents started the survey. After taking out the unfinished surveys and the non-economics/philosophy students 60 responses, 34 economics and 26 philosophy students, were left. In order to know which statistical test to perform when interpreting the results a normality test is performed on the results of the four research questions. This test revealed that all data is not normal (full results in the appendix). Since the data comes from two different groups of subjects it is also not dependent. Because the data is not normal and not dependent a

Mann-Whitney test can be used for the analysis of the data. The Mann-Whitney test is a nonparametric test of the null hypothesis that it is equally likely that a randomly selected value from one sample will be less than or greater than a randomly selected value from a second sample (Fay & Proschan, 2010). To test for statistical significance an alpha of 0,05 will be used.

Question 1 asked the participants to toss one coin with the possible reward of one ticket. The results are shown in fig. 1. The economics students reported 55,9% tails and philosophy students reported 53,8% tails. Running a Whitney-Mann test gives a p-value of 0,876. Since $(P=0,876 > P=0.05)$

the H0 hypothesis cannot be rejected. There is no significant evidence that economics students were more dishonest stating the outcome of the coin in the one coin and one ticket question.

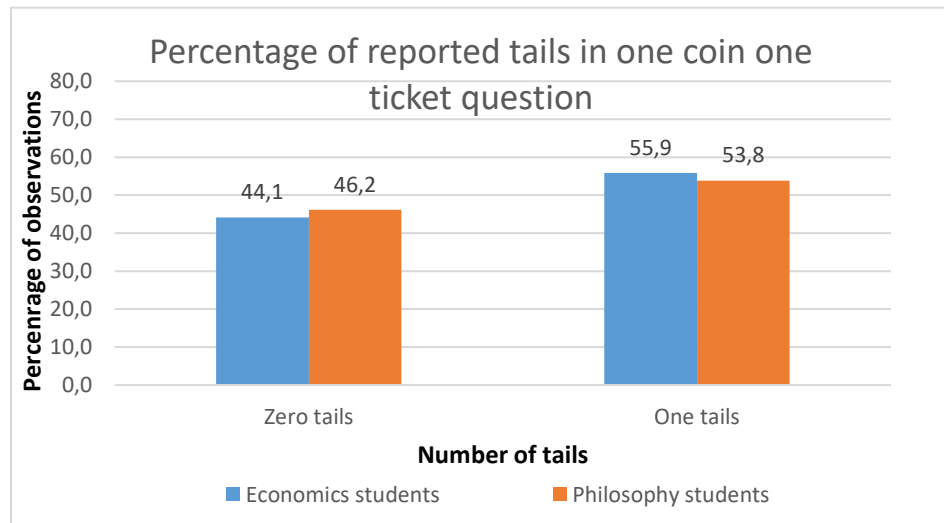


Figure 1

Question 2 asked the participants to toss one coin with the possible reward of four tickets. The results are in fig. 2. The economics students reported 67,6% tails and the philosophy students reported 61,5% tails. Running a Whitney-Mann test gives a p-value of 0,626. Since $(P=0,626 > P=0.05)$ the H0 hypothesis cannot be rejected. There is no significant evidence that economics students were more dishonest stating the outcome of the coin in the one coin and

four tickets question.

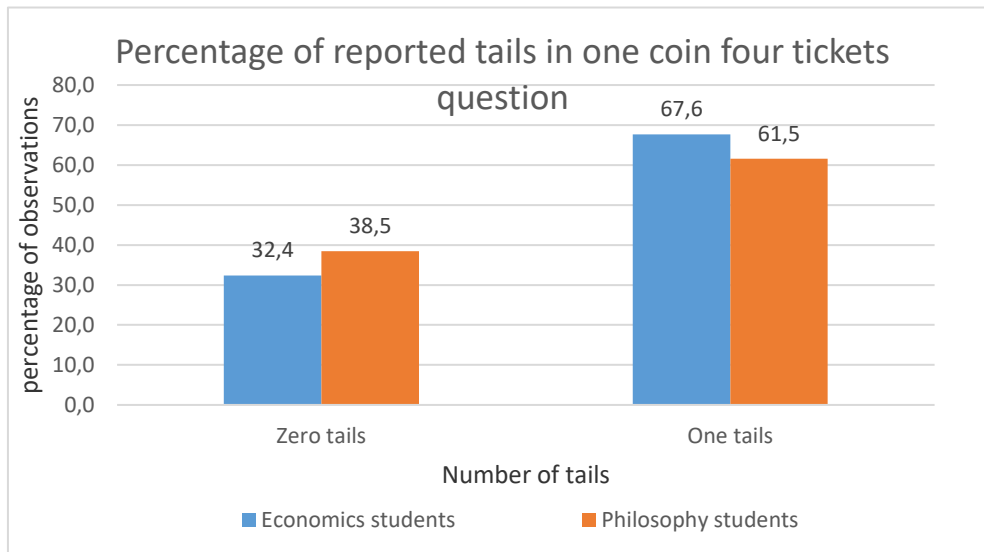


Figure 2

Question 3 asked the participants to toss four coins with the possible reward of one ticket for every tails. The results are shown in fig. 3. Running a Whitney-Mann test gives a p-value of 0,187. Since $(P=0,187 > P=0,05)$ the H_0 hypothesis cannot be rejected. There is no significant evidence that economics students were more dishonest stating the outcome of the coins in the four coins and one ticket question.

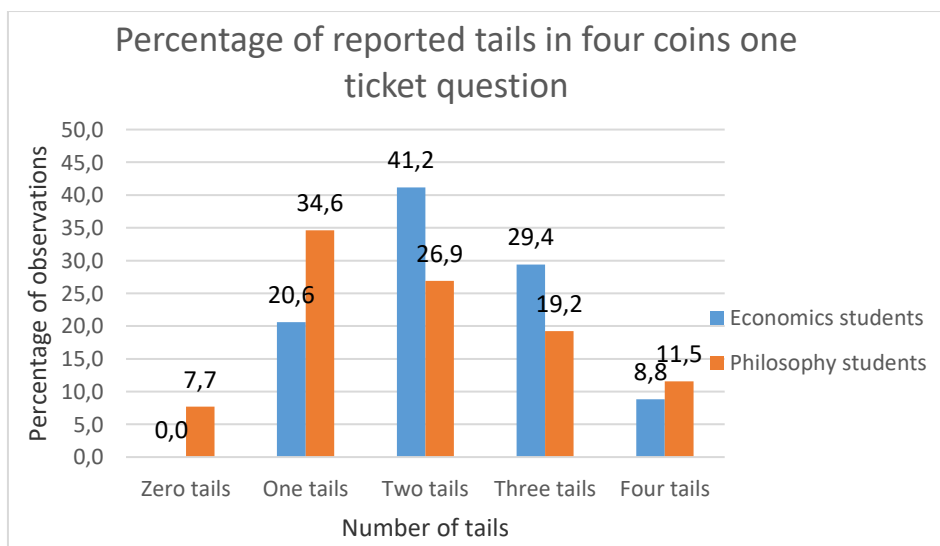


Figure 3

Question 4 asked the participants to toss four coins with the possible reward of four tickets for every tails. The results are shown in fig. 4. Running a Whitney-Mann test gives a p-value of 0,027. Since ($P=0,027 < P=0.05$) the H_0 hypothesis can be rejected. There is significant evidence that economics students were more dishonest stating the outcome of the coins in the four coins and four tickets question.

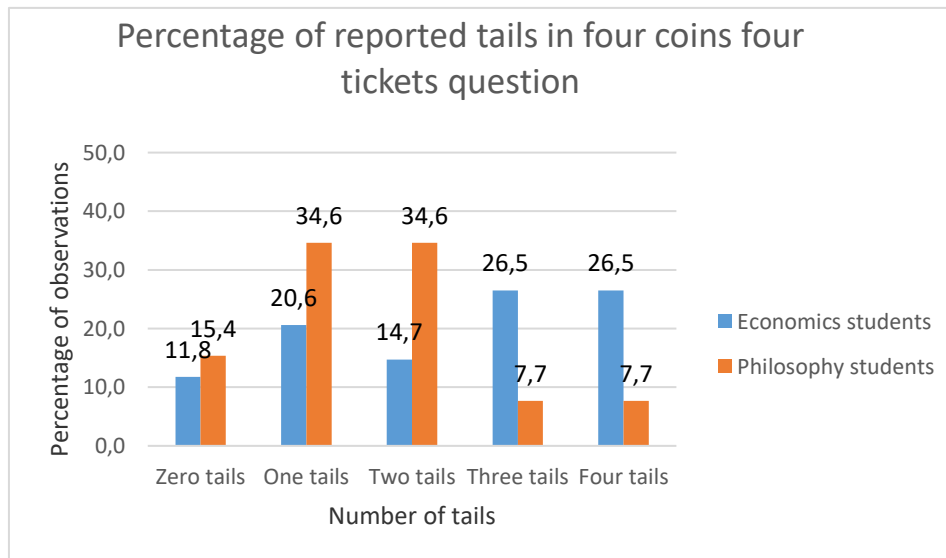


Figure 4

The four hypotheses postulated were:

Hypothesis 1: *'Economics students are not more dishonest when self-reporting the number of coins flipped tails when flipping one coin with a reward of one ticket if tails'.*

Hypothesis 2: *'Economics students are not more dishonest when self-reporting the number of coins flipped tails when flipping one coin when the reward is increased to four tickets if tails'.*

Hypothesis 3: *'Economics students are not more dishonest when self-reporting the number of coins flipped tails when flipping four coins with a reward of one ticket for every tails'.*

Hypothesis 4: *'Economics students are not more dishonest when self-reporting the number of coins flipped tails when flipping four coins when the reward is increased to four tickets for every tails'.*

Although all four questions had a higher percentage of tails by economics students only the fourth had a statistical significant difference. This means that only hypothesis 4 can be rejected.

The three not rejected hypotheses may not have statistically significant results, they do all show relatively more economics students having high amount of tails.

5. Conclusion

Even though three of the four hypotheses could not be rejected the overall results are positive. The three not statistically significant results are on their own not a definitive reason to assume a difference between economics and philosophy students. However their positive results do support the statistically significant result found in hypothesis 4 which showed that when tempted with high rewards and the opportunity to be dishonest just a little economics students do report more tails. The theory of self-concept maintenance did already predict the fourth hypothesis to be the most important, because it targets both the payoff and self-concept. To answer the research question: *'There is a difference between economics and philosophy students when given the opportunity to act dishonest for economic gain'*

The clear result in hypothesis 4 and the support it gets from the other hypotheses make it possible to conclude that there is indeed a difference between economics and philosophy students.

6. Implications and limitations

The in the theory section discussed surge in behavioral economic research into dishonesty is directly affected by this finding. Much of this research is conducted with students without a mention from which field of study they came from. This thesis has found that economics and philosophy students act differently in dishonesty research. Research not indicating which students are used has thus lost some of its power, because it cannot be known if the research groups were affected by this. This problem can be easily solved in future research by collecting field of study from the subjects and testing whether this affects the research outcomes. On top of that, questions about differences between students from other disciplines have also been strengthened by showing that there is a difference between economics and philosophy students. This problem can only be solved by actually testing different sets of students.

The data used in this thesis did show a clear result. However it is not completely clear if the participants in my research perfectly represent the population of economics and philosophy students. Because I had to find research participants myself, a lot of the participants in both the economics and philosophy group came from my Facebook friends group. Since I don't randomly send and accept friend requests on Facebook there may be a bias in either the economics or philosophy group or even both. A future study selecting random economics and philosophy students could resolve this issue.

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Appendix

Survey

Introduction

Q1.1 In this survey you will be presented with four cases in which you will either have to flip one or four coins. This will be done by flipping a coin on random.org. On every question you can visit the site by clicking the blue coloured text: random euro generator or if this does not work for you there will also be the full link you can copy and paste in your browser: <https://www.random.org/coins/?num=1&cur=60->

eur.netherlands-1euro. Only you will be able to see the outcome of the coin flip and there will not be any way to reconstruct the outcome. Please make sure you work in a browser that can open new tabs, so you don't leave the survey if you click the link. Your coin has one side, showing a 1 tails, and another one, showing (now ex) queen Beatrix heads. After receiving the instructions, you will be asked to toss the coin, and you will have to report afterwards how often the coin came up with tails. You will have to redo the coin flip for every question. For every tails you get, you will receive lottery tickets. After all surveys are collected a random lottery ticket will be drawn from all your combined tickets. If your ticket is drawn you will receive a 50 euro bol.com or Amazon gift card. Flipping more tails will thus increase your chance to win the gift card.

End of Block

Case 1

Q2.1 In this case you will have to flip 1 coin and you will receive one ticket if it comes up tails and zero tickets if it comes up heads. Now go to: random euro generator and report how many tails came up

- Zero tails (1)
- One tails (2)

End of Block

Case 2

Q3.1 In this case you will have to flip 1 coin and you will receive four tickets if it comes up tails and zero tickets if it comes up heads. Now go to: random euro generator <https://www.random.org/coins/?num=1&cur=60-eur.netherlands-1euro> and report how many tails came up

- Zero tails (1)
- One tails (2)

End of Block

Case 3

Q4.1 In this case you will have to flip 4 coins and you will receive one ticket for every tails that comes up and zero tickets for every heads that comes up. Now go to: random euro generator

<https://www.random.org/coins/?num=4&cur=60-eur.netherlands-1euro> and report how many tails came up

- Zero tails (1)
- One tails (2)
- Two tails (3)
- Three tails (4)
- Four tails (5)

End of Block

Case 4

Q5.1 In this case you will have to flip 4 coins and you will receive four tickets for every tails that comes up and zero tickets for every heads that comes up. Now go to: random euro generator

<https://www.random.org/coins/?num=4&cur=60-eur.netherlands-1euro> and report how many tails came up

- Zero tails (1)
- One tails (2)
- Two tails (3)
- Three tails (4)
- Four tails (5)

End of Block

Block 5

Q6.1 What gender do you identify with

Female (1)

Male (2)

Other (3)

Q6.2 What is your age

16-20 (1)

21-25 (2)

26-30 (3)

31-40 (4)

41-50 (5)

51-60 (6)

60+ (7)

Q6.3 What is your primary field of study

- (Business) Economics (1)
 - Philosophy (2)
 - Natural Sciences (3)
 - Applied Sciences (4)
 - Arts (5)
 - Humanities (6)
 - Social Sciences (7)
 - No study (8)
-

Q6.4 Would you identify yourself as a religious person

- Yes (1)
 - No (2)
-

Q6.5 What is your approximate yearly income in euros

- 0-9.999 (1)
 - 10.000-14.999 (2)
 - 15.000-19.999 (3)
 - 20.000-24.999 (4)
 - 25.000-29.999 (5)
 - 30.000-39.999 (6)
 - 40.000-49.999 (7)
 - 50.000+ (8)
-

Q6.6 The winners of the gift card will be informed by email. Please write down the email address you want to receive your gift card on. This email address will only be used to send one email to ask which card you want and one email with the card. You won't receive any emails if you don't win and you won't receive more than 2 emails if you do win.

End of Block

Statistical test results

Tests of Normality

	Kolmogorov-Smirnov ^a			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
In this case you will have to flip 1 coin and you will receive one ticket if it comes up tails and zero tickets if it comes up heads. Now go to: random euro generator and report how many tails came up	,365	60	,000	,633	60	,000
In this case you will have to flip 1 coin and you will receive four tickets if it comes up tails and zero tickets if it comes up heads. Now go to: random euro generator https://www.random.org/coins/?num=1&cur=60-eur.netherlands-1euro and report how many tails came up	,417	60	,000	,603	60	,000
In this case you will have to flip 4 coins and you will receive one ticket for every tails that comes up and zero tickets for every heads that comes up. Now go to: random euro generator https://www.random.org/coins/?num=4&cur=60-eur.netherlands-1euro and report how many tails came up	,195	60	,000	,906	60	,000

In this case you will have to flip 4 coins and you will receive four tickets for every tails that comes up and zero tickets for every heads that comes up. Now go to: random euro generator https://www.random.org/coins/?num=4&cur=60-eur.netherlands-1euro and report how many tails came up	,179	60	,000	,901	60	,000
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a. Lilliefors Significance Correction

Ranks

	What is your primary field of study	N	Mean Rank	Sum of Ranks
In this case you will have to flip 1 coin and you will receive one ticket if it comes up tails and zero tickets if it comes up heads. Now go to: random euro generator and report how many tails came up	(Business) Economics	34	30,76	1046,00
	Philosophy	26	30,15	784,00
	Total	60		
In this case you will have to flip 1 coin and you will receive four tickets if it comes up tails and zero tickets if it comes up heads. Now go to: random euro generator https://www.random.org/coins/?num=1&cur=60-eur.netherlands-1euro and report how many tails came up	(Business) Economics	34	31,29	1064,00
	Philosophy	26	29,46	766,00
	Total	60		
In this case you will have to flip 4 coins and you will receive one	(Business) Economics	34	33,00	1122,00
	Philosophy	26	27,23	708,00

ticket for every tails that comes up and zero tickets for every heads that comes up. Now go to: random euro generator https://www.random.org/coins/?num=4&cur=60-eur.netherlands-1euro and report how many tails came up	Total	60		
In this case you will have to flip 4 coins and you will receive four tickets for every tails that comes up and zero tickets for every heads that comes up. Now go to: random euro generator https://www.random.org/coins/?num=4&cur=60-eur.netherlands-1euro and report how many tails came up	(Business) Economics	34	34,76	1182,00
	Philosophy	26	24,92	648,00
	Total	60		

Test Statistics^a

	In this case you will have to flip 1 coin and you will receive four tickets if it comes up tails and zero tickets if it comes up heads. Now go to: random euro generator and report how many tails came up	In this case you will have to flip 1 coin and you will receive one ticket if it comes up tails and zero tickets if it comes up heads. Now go to: random euro generator and report how many tails came up	In this case you will have to flip 4 coins and you will receive one ticket for every tails that comes up and zero tickets for every heads that comes up. Now go to: random euro generator and report how many tails came up	In this case you will have to flip 4 coins and you will receive four tickets for every tails that comes up and zero tickets for every heads that comes up. Now go to: random euro generator and report how many tails came up
Mann-Whitney U	433,000	415,000	357,000	297,000
Wilcoxon W	784,000	766,000	708,000	648,000
Z	-,156	-,487	-1,321	-2,215
Asymp. Sig. (2-tailed)	,876	,626	,187	,027

a. Grouping Variable: What is your primary field of study

Frequency Tables

Economics students

**In this case you will have to flip 1 coin and you will receive one ticket if it comes up tails and zero tickets if it comes up heads.
Now go to: random euro generator and report how many tails came up**

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid Zero tails	15	44.1	44.1	44.1
One tails	19	55.9	55.9	100.0
Total	34	100.0	100.0	

In this case you will have to flip 1 coin and you will receive four tickets if it comes up tails and zero tickets if it comes up heads.

Now go to: random euro generator

<https://www.random.org/coins/?num=1&cur=60-eur.netherlands-1euro> and report how many tails came up

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Zero tails	11	32.4	32.4	32.4
	One tails	23	67.6	67.6	100.0
	Total	34	100.0	100.0	

In this case you will have to flip 4 coins and you will receive one ticket for every tails that comes up and zero tickets for every heads that comes up. Now go to: random euro generator

<https://www.random.org/coins/?num=4&cur=60-eur.netherlands-1euro> and report how many tails came up

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	One tails	7	20.6	20.6	20.6
	Two tails	14	41.2	41.2	61.8
	Three tails	10	29.4	29.4	91.2
	Four tails	3	8.8	8.8	100.0
	Total	34	100.0	100.0	

In this case you will have to flip 4 coins and you will receive four tickets for every tails that comes up and zero tickets for every heads that comes up. Now go to: random euro generator <https://www.random.org/coins/?num=4&cur=60-eur.netherlands-1euro> and report how many tails came up

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Zero tails	4	11.8	11.8	11.8
	One tails	7	20.6	20.6	32.4
	Two tails	5	14.7	14.7	47.1
	Three tails	9	26.5	26.5	73.5
	Four tails	9	26.5	26.5	100.0
	Total	34	100.0	100.0	

Philosophy students

In this case you will have to flip 1 coin and you will receive one ticket if it comes up tails and zero tickets if it comes up heads. Now go to: random euro generator and report how many tails came up

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Zero tails	12	46.2	46.2	46.2
	One tails	14	53.8	53.8	100.0
	Total	26	100.0	100.0	

In this case you will have to flip 1 coin and you will receive four tickets if it comes up tails and zero tickets if it comes up heads.

Now go to: random euro generator <https://www.random.org/coins/?num=1&cur=60-eur.netherlands-1euro> and report how many tails came up

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Zero tails	10	38.5	38.5	38.5
	One tails	16	61.5	61.5	100.0
	Total	26	100.0	100.0	

In this case you will have to flip 4 coins and you will receive one ticket for every tails that comes up and zero tickets for every heads that comes up. Now go to: random euro generator <https://www.random.org/coins/?num=4&cur=60-eur.netherlands-1euro> and report how many tails came up

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Zero tails	2	7.7	7.7
	One tails	9	34.6	42.3
	Two tails	7	26.9	69.2
	Three tails	5	19.2	88.5
	Four tails	3	11.5	100.0
	Total	26	100.0	100.0

In this case you will have to flip 4 coins and you will receive four tickets for every tails that comes up and zero tickets for every heads that comes up. Now go to: random euro generator <https://www.random.org/coins/?num=4&cur=60-eur.netherlands-1euro> and report how many tails came up

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Zero tails	4	15.4	15.4
	One tails	9	34.6	50.0
	Two tails	9	34.6	84.6
	Three tails	2	7.7	92.3
	Four tails	2	7.7	100.0
	Total	26	100.0	100.0