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Econ 812

HW #8 Answer Key

1. Prove/show that the Allais paradox violates EU theory regardless of whether preferences are risk-averse, risk-neutral, or risk-preferring.

From the notes, the Allais paradox is that most people prefer the second choice in the first pair of gambles but the first choice in the second pair.

Pair 1: \$27,500 w/p=.33, \$24,000 w/p=.66, \$0 w/p=.01; \$24,000 w/p=1.

Pair 2: \$27,500 w/p=.33, \$0 w/p=.67; \$24,000 w/p=.34, \$0 w/p=.66.

In EU terms, this means that:

$$(a) .33*EU(\$27,500) + .66*EU(\$24,000) + .01*EU(\$0) < EU(\$24,000)$$

AND

$$(b) .33*EU(\$27,500) + .67*EU(\$0) > .34*EU(\$24,000) + .66*EU(\$0)$$

I will now prove that these two inequalities contradict each other.

From (a):

Subtract $.66*EU(\$24,000)$ from both sides to get:

$$(a1) .33*EU(\$27,500) + .01*EU(\$0) < .34*EU(\$24,000)$$

from (b):

Subtract $.66*EU(\$0)$ from both sides to get:

$$(b1) .33*EU(\$27,500) + .01*EU(\$0) > .34*EU(\$24,000)$$

Thus, (a1) and (b1) directly contradict each other, hence the paradox. QED.

Peter Leeson
Econ 849
4/13/02
Dr. Caplan

1. The most empirically important choice theory anomaly is the endowment effect. According to basic choice theory, individuals' endowments and preferences do not interact with one another. However, the results of behavior economics that tests this proposition finds quite the opposite. People seem to place a higher value on objects merely because they are *their* objects. In other words, individuals attach a premium to goods that they own. In a classic experiment, agents who are given a coffee cup had a markedly higher willingness to accept than willingness to pay. Individuals given coffee cups demanded more in payment to sell the cup they now owned than they were willing to pay to buy if before they owned it. This, of course, contradicts the assumption of basic choice theory that preferences and endowments are independent of one another and suggests instead that individuals interact their endowments with their preferences. Some critics of this experiment have pointed to wealth effects to explain the apparent anomaly but this seems like a very weak objection. While strictly speaking, it is true that the coffee cup in the hands of certain individuals constitutes an increase in their stock of wealth, it is unlikely that this infinitesimal increase in wealth would lead to the substantial differences in willingness to buy the cup before the cup is given and willingness to sell the cup after the cup is given, that experiments show.

We could use this result to help explain why people in the real world seem to place a premium on something they own merely because they own it. It is uncommon, for instance, to find an individual who is initially only

moderate sum of money (or even none) for a dog. However, once this dog is given to the individual, the individual would require sum considerably larger (or simply positive) sum to sell the dog. The movie, "As Good as it Gets," with Jack Nicholas, demonstrates this principle well enough. In the real world, it seems as though people interact their preferences and endowments a great deal. Few people would deny that individuals form attachments to things that are *theirs* merely because they are *theirs*. The label of ownership seems enough to cause individuals to value the object more highly than they would in the absence of ownership.

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* Good!

Eric Sygnatur

Homework #8 + #8 supplement

2. There are many rather trivial things I do on a day-to-day basis that are motivated by altruism, fairness, and vindictiveness, rather than narrow selfishness. Tonight, for example, I will attend two meetings at church, both of which are voluntary committees on which I serve: I sit on my church's school board, and my church's constitution committee. The former is part of my strong belief in non-secular education – a "mission", if you will, for K-8th grade. I serve on the constitution committee as a favor to the committee's chair, who is a casual friend but not someone with whom I spend time outside of church. To spread the church altruism example a bit more, part of my workday today is earning money to tithe – although I only write one check per week, it is a proportion of my earnings (much like taxes). So even though I haven't tithed yet today, I know some of my efforts go to that end. I also dropped some spare change I had into a bum's cup. There is, admittedly, some benefit to me by giving up my change: It makes it easier to get through the metal detectors at work. However, I value the change more than the minor convenience. 2/2

For altruism's sake, I provided career advice and encouragement to one of my colleagues. This colleague is an acquaintance-friend, and I appreciate her company at work, but she isn't happy here. My best interests are to have her stay, but I did all I could to help her secure an interview at another agency this afternoon, and to help her do well during that interview. I am 75% confident that once she leaves, I won't ever hear from her again.

Out of fairness to my coworker this morning, I did not eat a doughnut. Occasionally, on Fridays, my peers and I buy doughnuts for the office – but a dozen doughnuts here means someone will not get one. Since I'm usually in early, I almost always get one, but today, out of fairness, I refrained even though I wanted that doughnut and if I had eaten it, my "left-out" coworker would have been none-the-wiser. As it was, my late-rising coworker was able to enjoy today's morning snack.

Lest anyone think I'm too "nice", I was also fairly vindictive today. One of my coworkers asked if I would like to catch a happy-hour cocktail before my meetings

tonight. Even though I have the time and the inclination to go, I declined the invitation because this particular coworker has a history of declining my invitations to do the same. My best interests were at that happy hour, but my vindictiveness dictated otherwise.

John Driessnack

3. Does prospect theory, in its simple or sophisticated forms, provide a better description of your own choice behavior than EU theory?

Yes. More often than not, my expected utility is almost always influenced by risk aversion or seeking activities centered on whether it is a loss or a gain. I have run through the theory on several items and feel that my behavior changes depending on the loss or gain in the activity we are talking about. In my early days I would never have bought higher risk stocks or even a lottery ticket. I did not follow the simple or sophisticated forms of prospect theory. I was pretty risk averse in most gain and loss activities. This is no longer true. As my endowments have increased over the years, I would say my behavior relative to risk and my preferences have changed. I've gotten to a point in my life in which basic needs are relatively assured and thus I am more risk seeking in what in the past I might have taken a risk-averse position. I'm still risk averse in losses with low probabilities, but have gotten more and more risk-seeking in losses with high probabilities. I follow the sophisticated form of the theory.

Examples include my willingness to be risk-seeking in gains with low probabilities. This would include buying riskier stocks and not having as balanced and safe portfolio in investments. I have migrated from having what little money I had in safe money markets and being risk averse to an ever increasing aggressive position. In the past I was risk averse in gains, high probability or not. I would never have even bought a lottery ticket and been risk seeking even in the gain with low probability that costs very little. This has changed. I keep less cash in money markets today than in the past since my overall endowments are larger. The risk is spread, thus allowing me to be more risk seeking in certain activities.

I've also gotten more risk seeking with losses with high probabilities. Example would be my car insurance. I take a risk-averse position on the low probability items like total loss of the car and major injury, but I take a more risk-seeking position in the high probabilities like fender benders. I have done this by increasing my deductibles.

I would suspect that as my assets continue to grow I will be more and more risk seeking. Additionally, I'm sure the increase in my assets has changed my expected utility for the same activity. The reference point has changed and thus comparisons with choices in the past need to consider this change in the EU. I suspect seeking risk will keep life interesting as my life has gotten more comfortable!

Chris
Coyne

4. I would say that my behavior does conform to basic intertemporal choice theory. I believe that when I do make purchases, I discount future payments. When purchasing a new appliance, I am very careful to do my homework and purchase the one that is a combination of the features I am looking for with an energy efficiency that will minimize my energy payments. This suggests that my discount rate is in line with the interest rate. When I worked at JP Morgan, we also had the choice of taking our bonus either up front (i.e., a lump sum) or over 12 months. The given reasoning for this is that the per month payments is that you will have a set guaranteed additional income each month. Each year, I choose to take my bonus up front. This is in line with intertemporal choice theory as well. The way I see it, I should take the lump sum and invest it – even in a low return investment, at least I am making some return.

In reflection, I have made some purchases that are inconsistent with intertemporal choice theory. However, the cost of correcting them are very high. For example, it would be very costly to spend my time checking the energy efficiency of my current appliances, and compare that to the energy efficiency of the appliances currently available (or available at the time I made my purchase). Moreover, even if I did take the time to check the energy efficiency of my appliance and found that they were not the most efficient one available, the transaction and replacement costs would, most likely, be extremely high.

2/2

← End!
Subsidized
student
loans →

Nathan
Powell

Do you suffer from belief perseverance and/or confirmatory bias? Discuss specific examples.

Perseverance bias is a certainty when it comes to taking a test. I took a prep class for the SAT in high school and for the GRE and GMAT my senior year in college. In the section of the classes devoted to test taking skills, all three asserted that when there is uncertainty about an answer, your initial guess is your best answer. This has stuck with me through the years when it comes to multiple-choice tests. Now when I take tests, I become increasingly confident about my answer as I ponder the question over time. This is especially true for the essay questions. Once I have formulated an answer I tend to mine the essay for supportive evidence and ignore conflicting evidence. However, I am typically over-confident that I am correct and this method has seldom failed me, except for econometrics.

As a young investor I had a terrible habit of perseverance and confirmatory bias. I am grateful for this as it trained me to be a more incisive investor. I once had a tendency to intently read the Wall Street Journal and Barron's, both worthy publications for information (Barron's is far superior). I developed my opinions and predictions off what I read. My dad would sometimes give advice to the contrary with regards to what I had read and believed, and I paid the price for this mistake. Fortunately I was in high school and we were not talking about millions of dollars. At this age I was unwilling to accept what I deemed outsider advice. How could my dad know more than an analyst on Wall Street? When you lose a few bucks to your own stubbornness you have every incentive to develop the most open-minded approach.

With regards to economic theory, these biases play a large role in my appraisal of theories conflicting free markets. For instance, I tend to write off some of the evidence that others present to show the ill effects of capitalism, open markets and freedom of choice. It is suffice to say that this is not the best behavior to have when it comes to opposing theories, but it is often difficult to understand how this evidence can convince people that governments and regulations are a necessity. For instance, when I was reading an article by George Soros, he was reflecting on the ill effects capitalism has played in the development of world societies. The evidence he presented was absurd, especially for one who is in the upper echelon of all time investors, and I wrote it off immaterial. This question prompted me to read the article again and review the evidence. Perhaps some of the evidence shows a less than utopian result, but no one ever said capitalism produced 100% perfect results time and again. It is dynamic like all other social forms.

Religious beliefs definitely suffer from these biases. I would venture to say that most people have a tendency to ignore evidence to the contrary for several reasons. When I was younger I could not understand how it was possible for people to believe in religions other than Christianity. When friends at school presented evidence that refuted Christianity, I just shrugged it off without a thought. Now I have come to question my religious beliefs and become more concerned about finding out the truth about what god is the real god. So, in this respect I have overcome my perseverance and confirmatory bias in the hopes of find some absolute truth. My friends and family continue to hold on to those biases, however.

2/2

6) It appears to me that availability bias is generally caused by ill informed individuals that overestimate the probability of some event. I try not to slip on this form of bias but the danger is always there. One case that I recall suffering from this was immediately after September 11. I found myself worried about a possible biological attack in the DC area. This was of course fueled by the media. I gathered information about the feasibility and likelihood of extensive damage to the population in an event like this. It came to my relief that experts coincide that an extensive deadly attack was almost impossible, so I adjusted my expectations immediately and the anxiety disappeared. To avoid miss interpretations I must say that not even in the peak of my (mild) anxiety that lasted few days after Sept. 11 did I considered buying gas masks as I dismissed this as plain none sense.

Representative bias is prevalent because stereotypes are prevalent. This again has a lot to do with ignorance. For example an American that hardly has ever traveled outside the U.S. or that has had little contact with, say, muslims, may think that most muslims are terrorists. I think I am less vulnerable to suffer from this bias due to my travels in different countries in Europe, Asia and Latin America. Nevertheless, I may have fallen victim of this bias in some occasion as I remember my wife saying that I should "not judge a book by its cover" when referring to certain people!

2/2

7.

One could argue that the argument that cognitive biases are the only type of bias shows some pretty strong cognitive biases on the part of researchers in the field. Why would someone argue this? Because it seems as though motivational biases exist in the world. If it is in fact true that there are both motivational biases and cognitive biases, then researchers in cognitive psychology are certainly biased. Otherwise, they would recognize that both types of biases exist.

But how would they be biased in this case? There are two choices; motivationally or cognitively. It is certainly possible that some cognitive psychologists are just incapable of correctly filtering the facts. To them, all biases honestly look like cognitive biases. However, it seems more likely that cognitive psychologists who ignore motivational biases are actually motivationally biased. Why? Because there seems to be a trend of academics believing their own work is more important than other competing work. It seems likely that cognitive psychologists who believe cognitive psychology is an uber-explanation for non-rational behavior would probably believe the opposite if they started work from the opposite perspective.

But this brings out a trouble I have with the line defining these two categories of bias. I doubt that cognitive psychologists are actually being willfully deceitful in making overstated claim about cognitive bias as an explanatory heuristic. I rather suppose that they have been more likely to focus attention and study on explanations in their area of expertise. I would think that the bias is certainly caused motivationally, but their experience of the bias is honestly cognitive.

I think that the answer to why a cognitive psychologist would consistently posit cognitive answers to bias questions, lies not in cognitive psychology literature, but rather in philosophy of science. I think I'd agree with Thomas Kuhn's explanation of such a problem. A scientist devotes himself to a body of theory (a paradigm) that encompasses

Kyan
Opera

2/2

a large set of problems. In a world of radical uncertainty of knowledge, the paradigm accepted may be based on a fairly arbitrary basis – for instance the paradigm a scientist was trained in initially. But a scientist, over time, is motivated to continue analyzing under the paradigm. A scientist has an incentive to defend his paradigm. But over time, this incentive is linked with the way the scientist actually views the world. Thus, to Kuhn, a biased theory has both motivational and cognitive errors associated with it, and these two factors are interdependent.

Ryan
Open

...that people rationally allocate their time to learning
...marginal cost of learning on any given subject equals the marginal benefit. How
does knowledge of the interaction effects of large economic variables, especially with
regard to political economic issues, benefit anyone? The cost of ignorance on these
issues is, for the most part, is really pretty low. We can imagine that as the benefits
increase the level of investigation on these issues will increase. So a day trader or stock
analyst is probably less likely to have biased beliefs than a manager at a manufacturing
company. Likewise, someone who is greatly entertained by knowing something about
the economy is probably more likely to pick up a book on it.

2/2

But this only serves as part of an explanation. If people are rationally ignorant on
'big picture' economic issues, where does their information come from? I think that
many feasible explanations probably could be boiled down to cognitive bias. People
have not invested in learning how to think about economic issues, and so are likely to
think about wrong headedly. Stuff on the benefits of free-trade are probably just an
inability to correctly consider division of labor issues. However, there are probably a

number of economic issues that are more motivationally biased. People who believe
welfare causes major economic problems overall are probably not basing this on a review
of the literature - its more likely to come out of some sort of resentment. Likewise,
people who believe the opposite are likely to have some warm and fuzzy feelings about
the poor and are loathe to attribute economic difficulty to helping them out. Both of
these beliefs are motivationally based, right or wrong.

Where people are rationally ignorant, they are likely to pick up low cost answers.
These low cost answers can be whatever they were taught in high school or what they
hear at the bar - a cognitive bias. Alternatively, low cost answers can be based on
motivational issues, analogizing large abstract economic variables into things they have
personal connection with (i.e. welfare causes economic disaster because when my son
doesn't work, its an economic disaster for him).