Behavioral Economics: An Overview for Principles of Microeconomics Students

Lucas M. Engelhardt

1/11/2011

1   Introduction

Throughout much of the course we've been discussing how people make choices. One underlying assumption is that people make decisions "rationally". "Rational" can mean lots of things, but here it's meaning has a few parts.

1. Preferences are stable and consistent.

2. Preferences are "transitive".

3. Preferences are individualistic.

4. More (of a good) is preferred to less.

5. Preferences are over outcomes.

6. People are reasonably good at statistical reasoning.

Behavioral economics attempts to do experiments - either in a lab or in the field - to test these assumptions as directly as possible. On the whole, behavioral economists find that people are not "rational" in the sense laid out here. Instead, people are "predictably irrational". That is, even though people don't follow the rules that we usually assume they follow, they do have certain tendencies that are predictable. This writing lays out some of the irrationalities that we often predict.

2   Endowment Effects, Loss Aversion, and Default Effects

Suppose that I ask you whether you prefer a mug or whether you prefer $2. Standard economic theory suggests that your answer shouldn't depend on whether you already have the mug or not. Consider two scenarios. Scenario A: I give you a mug, and then offer to buy it from you. We go back and forth to find the minimum you'd be willing to accept for the mug. Scenario B: I give you

the choice between a mug and some quantity of money. I vary the amount of money until I find out exactly how much I have to offer you for you to take the money rather than the mug.

Standard economic theory suggests that the two amounts should be the same. After all, what's really happening is that I'm trying to figure out exactly how much money I have to give you for you to take money rather than a mug. Whether I "give you" the mug before I make an offer or not is totally irrelevant according to the standard theory.

However, in reality this is not true. People seem to be heavily influenced by an "endowment effect". That is: once someone acquires something (or is given something) they tend to be very reluctant to part with it.

Kahneman, Jack L. Knetsch, and Thaler (1990) tried this experiment. They divided a set of subjects into two groups. One group was given a mug, and asked about their minimum "willingness to accept" - that is, what the lowest amount of money was that woudl be enough for them to part with the mug. The second group was given the opportunity to buy a mug, and the economists observed their maximum "willingness to pay". Technically, these two numbers should be very close together - differing by no more than a few cents. To see that, consider this value scale:

1. $2.76

2. the mug

3. $2.75

It absolutely must be true that the mug fits between two prices that are different only by one cent - as people can choose between any price and a mug, they must be able to compare any price to the mug. So, a value scale like that above is certainly possible. In this case, this person's willingness to pay for the mug is $2.75, assuming they don't have it. They'd be willing to give up $2.75 to get the mug. Their willingness to accept is $2.76, assuming they do have the mug. They'd be willing to sell the mug for that price. The key: willingness to pay and willingness to accept should be very close together.

But, that's not what Kahneman et al. found. In their experiment, the median willingness to accept was $5.75. The median willingness to pay was $2.25. This is an enormous gap! It suggests that people value something more after they receive it than they do before they receive it. (So, the grass isn't greener on the other side of the fence!) We call this the "endowment effect". Once someone is endowed with a resource, they become very unwilling to part with it.[1]

The endowment effect implies another phenomenon called "loss aversion". Loss aversion is exactly what it sounds like - people try to avoid losing things that they already have - and will often take large risks to avoid losses!

---

[1]This has profound implications for things like wealth redistribution. Even though we might think that Bill Gates doesn't value his "marginal dollar" very much, since he's so wealthy, the endowment effect suggests that taking a dollar away from him will lead to him feeling significantly worse!

Now, some might observe that Kahneman et al.'s experiment wasn't quite fair. One group was *given* a mug, while the other had to *pay* for it with their own money. So, there might be an "income effect" here, since the first group is made richer than the second group. So, Kahneman et al. ran the exact experiment laid out in Scenario A and Scenario B above. There, they still found a significant endowment effect. The median member of the group that was given the mug would only sell it for $7.12. The median member of the group that was given a choice between a mug and money would take the money as soon as it was over $3.12.

However, there are still a couple possible objections to this result. First, the experiment may have suffered from a lack of anonymity. It might be that people want to develop a reputation for "driving a hard bargain". In that case, as a seller, you want to say you're only willing to sell at a much higher price than you actually are. If you're a buyer, you want to say you're only willing to buy at a much lower price than you actually are. Second, the experiment may have suffered from a lack of experience on the part of participants. When people aren't comfortable with a decision, they tend to avoid making one. So, it takes a very high price to convince people to actually make the decision to give up their mug - or a very low price to convinced them to give up their money.

To correct for these effects, List (2003) ran an experiment at a sports card fair. He had two memoribilia: A and B. The two were of equal monetary value. These memoribilia were given as thanks for responding to a questionnaire. Each person received either A or B, and then was given the chance to swap the one they received for the other. Since the two were of equal value, we'd expect that about 50% of participants would swap. However, List found that for inexperienced traders, only 6.8% swapped. More experienced memoribilia traders (who trade sports memoribilia at least six times per month) were much more likely to swap. 46.7% did. This suggests that the endowment effect is closely tied with experience.

However, I'm sure you have an objection. It's possible that the "inexperienced" group just doesn't like trading at all - and so isn't likely to trade ever. The "experienced" group likes trading, so they're more likely to trade. Maybe these results are driven by personality, not "experience".

To control for this, List ran the experiment over a period of time, keeping track of the same traders. His findings? As a trader increased their trading activity, they became more likely to swap. Odds are good that their personalities didn't change over that time - so it was probably experience that changed the endowment effect.

Let's sum all this up: People tend to stick with what they're given. However, more experience leads people to be more likely to do something other than the default.

This has a profound impact on our lives!

For example, suppose that an employer has setup retirement funds so that their employees are automatically enrolled - but can choose to opt-out at any time. Such an employer should expect that many of their employees will participate in the retirement fund. Suppose that another employer has setup retire-

ment funds that employees must "opt-in" to. This employer should expect that few employees will opt-in. We call this the "default effect", and it shows up everywhere. (Think about sides on a menu! Few people will substitute one side for another, even if they are told that they can! So, as a restaurant manager, do you want the default side to be a cheap one or an expensive one? You decide!)

Another example: people tend to hold on to poor investments for FAR too long. For example, many people will refuse to sell a stock at a loss - despite the fact that the best thing to do is typically to get your money OUT of a failing stock so that it can be put into a better company. Loss aversion often leads people to make this mistake - especially early in their market experience.

3   Reference Points, Anchoring, Narrow Framing

A related topic is "reference points". The reference point hypothesis suggests that people compare a state of affairs to some reference point. For example, people may compare their current financial well-being with their well-being a year ago. (This leads to "habit formation".) Or they may compare their well-being with what they perceive their neighbors experience. (This leads to "keeping up with the Joneses".)

A central point of the reference point hypothesis is that, when things are worse than the reference point, they are perceived as being "very, very bad". If things are better than the reference point, then they are perceived as "good" (but not "very, very good"). As a result, people will try very hard to get up to (or to maintain) their well-being at the reference point level. But, they won't necessarily try very hard to move beyond it.

This relates to the endowment effect, as it's very possible that people sometimes consider their reference point to be their current state of affairs. So, if I have a mug - and having a mug is my reference point - and I imagine a world without the mug, it seems "very, very bad". As a result, I need a lot of money to compensate me for giving it up. If I don't have a mug, I consider that to be my reference point. Attaining a mug seems "good" but not "very, very good". So, it doesn't take much money for me to decide to take the money rather than the mug.

The idea of reference points has powerful applications in marketing. If, as a marketer, you can provide a reference point to a potential customer, you can change the way they see a decision.

For example, when I go into a shoe store and look at a pair of shoes, my natural reference point is me paying $0 and keeping the shoes I have. Therefore, I'm very reluctant to give up any money unless I find a really good deal. But, some shoe stores (noticeably, DSW) decide to provide a different reference point. They put a "compare" price on their shoes. Think about it: is there any evidence that anyone anywhere has ever paid the "compare" price for the shoes? No! So, why should I compare the DSW price to the "compare" price? From a marketing

perspective, it makes perfect sense - once we understand reference points. The "compare" price changes the reference point for the consumer. Rather than comparing paying $0 and not having a new pair of shoes to paying $50 and having a new pair of shoes, I'm not comparing paying $70 (the "compare" price) and having a new pair of shoes and paying $50 (the DSW price) and having a new pair of shoes. Obviously, paying $50 is the better deal! So, I become much more likely to buy the shoes - assuming that my brain accepts the $70 price as a reference point.

Consider the following experiment that was performed by some behavioral economists. They had a number of subjects write down the last two digits of their Social Security number. Then, these subjects were asked to say how much they'd be willing to pay for a particular good (with a retail value of $70 - though that was undisclosed). The findings? People with a higher Social Security Number were willing to pay more for the good! Do you think that people with higher SSNs are just bigger spenders? I doubt it. SSNs are distributed almost randomly. It's much more reasonable to believe that people were influenced by the mere presence of a high (or low) number when they were thinking of their willingness to pay. This is a phenomenon we call "anchoring". Once people are provided with a number - even an irrelevant one - they tend to stay somewhat close to it when asked to give another number that actually has a meaning.

A related topic is "narrow framing". Narrow framing captures the fact that people aren't very good at thinking "across" different types of goods. Consider the following scenarios. Suppose you are planning to go to the theater to see a show. Tickets cost $10. Scenario A: You buy your ticket ahead of time, and have them in your possession. When you get to the theater, you find that your ticket is missing. However, you have enough money in your wallet to buy a ticket at the door. Do you? Scenario B: You plan to buy your ticket at the show. When you get to the theater, you find that you have $10 less in your wallet than you thought you did, though you still have enough to buy a ticket to the show. Do you?

An insightful mind will see that these two situations are basically the same. In either case, you're out $10 (either in the value of the ticket or the value of the cash). Since your situation is the same, you should make the same decision, right? But, relatively few people do. Many people choose not to attend the show if they lose their ticket, but choose to buy a ticket if they lost the cash. This suggests that people don't see $10 as being basically equivalent to a ticket - despite the fact that they are in this scenario.

We see narrow framing in other situations. For example, it's not unusual for people to drive across town to save $1 on a tank of gas. But, it is unusual to see people drive across town to save $1 on a television set. Why is this? In both cases, you'd be driving across town to save $1, and a dollar saved on a tank of gas spends no more easily than a dollar saved on a television set. Yet, people don't recognize that "a dollar is a dollar". They are often bound by narrow framing. Televisions are expensive - so $1 seems small when thinking about the price of a television. A tank of gas - while more expensive than 10 years ago - is not nearly as expensive as most televisions. So $1 seems relatively large. But,

the $1 saved on a TV is not actually smaller than the $1 saved on a tank of gas. It just seems so because of narrow framing.

4   Gift Exchange

The standard model suggests that people are basically self-interested. However, this seems to be contradicted in some cases. In these cases people express "social preferences" (that is, they seem to look after others' well-being in addition to their own). This is also more likely when people believe that others have "social preferences" as well. A result of this? The "gift exchange" phenomenon.

We've all been in that situation. Someone buys us a gift that we don't expect. At this point, we often feel obligated to give them a gift in return. Economists have found that this phenomenon extends beyond birthdays and Christmas!

For example, Kube, Marechal, and Puppe (2008) did an experiment involving workers. Workers were hired for a three hour shift shelving books at a library. They were offered 36 euros for their time. The hirees were then divided into three groups. One received the agreed wage. Another received the agreed wage plus a 20% bonus (they were told about the bonus prior to beginning work). The third group was given a thermos worth 7 euros - the equivalent of a 20% bonus.

The results are surprising. The group that received a cash bonus was 6% more productive than the group that received only the agreed wage. So, this bonus did increase productivity - but not enough to "pay for itself". (Paying 20% more to get 6% more productivity doesn't pay for itself!) The group that received the thermos, however, was 30% more productive than the group that received the agreed wage. So, the thermos did pay for itself!

This is highly suggestive about gift exchange in labor markets. If workers perceive that they have been given a gift, they will pay that gift back by being more productive. This explains why the cash bonus doesn't result in as much of a productivity increase. The cash bonus is seen (at least by some) as an increase in wages. The physical gift, on the other hand, is obviously not part of wages - it is a gift. So, it has a bigger impact on productivity!

So, if you're ever a manager, remember: if you want your workers to be more productive, give them gifts that are *obviously* gifts.

5   Violations of Transitivity

First, let me lay out what transitivity is. Transitivity is a mathematical property that applies to things like numbers. It works like this: If A > B, and B > C, then A > C. It also works with preferences in the standard model. If a person prefers a pear to an apple, and prefers an apple to an orange, then they must prefer a pear to an orange!

However, when we run experiments we often find that preferences aren't even transitive. How we test this: We ask people about how much they'd be willing to pay to be in various gambles. One gamble is "high stakes, low probability" - not unlike the "MegaMillions" state lottery. In the experiment, it might be a 1% chance of winning $1000. The other gamble is "low stakes, high probability". For example, a 90% chance of winning $11. Most people assign a high value to the high stakes gamble, and a low value to the low stakes gamble. This suggests that they prefer the high stakes gamble. (They'd be willing to pay more for it - therefore, it is preferred.) In the next part of the experiment, people are asked to choose between the two gambles. Many people ended up reversing their preferences, and choosing the low stakes gamble! In one experiment, a full 1/3 of the participants started by valuing the high stakes gamble more highly, and ended by choosing the low stakes gamble!

6   Failures in Statistical Reasoning

A fact that should be unsurprising: people aren't very good at statistical reasoning. A fact that is surprising: people seem to all make the same kind of errors when they try to do it! (It's often said that "Great minds think alike." Apparently, this is also true of not-so-great minds! So, be warned - agreement is not a sign of being correct!)

The first regularity we observe is overconfidence. For example, a professor may tell a class that 1/3 of the students will receive A's. When he makes this announcement it's highly likely that more than 1/3 of the students in the class will expect to receive A's. In a survey, Svenson (1980) found that 93% of drivers believe that their drivings skills are "above the median". This is, of course, impossible, as the median is the point that divides the top 50% of drivers from the bottom 50%. In an experiment, Camerer and Lovallo (1999) ran multiple rounds in which the top "c" out of "n" entrants in a round received positive payoffs. The others received negative payoffs. Players were allowed not to participate, guaranteeing a payoff of zero. In the first set of rounds, the winners were determined randomly. In the second set of rounds, the winners were determined based on their ability to successfully and quickly complete a puzzle. Far more players entered the contest in the second round - despite the fact that they were (on average) no more likely to win. The only reasonable interpretation? They overestimated their own ability relative to other people.[2]

Another type of overconfidence is an overestimation of one's future self-control. For example, it's very common for people to buy gym memberships and then never use them. Naturally, this makes no sense, as it's a pure waste of money! A reasonable explanation is that people planned to use the gym membership when they bought it - but then didn't have the self-control to make themselves go to the gym when it came time to actually make the decision to go.

---

[2]An interesting side point: this suggests that we shouldn't be that worried about low self-esteem. It seems that the much more common problem is that people have self-esteem that is far too high!

On the other hand, there is some evidence that people are aware of their self-control problems. For example, many students express a preference for shorter deadlines over longer ones, though, in itself, this provides them with no clear benefit. (After all, you always could do the assignment before the deadline!) Also, it's not unusual for banks or credit unions to offer Christmas savings accounts. With these accounts, money is taken out of the depositor's paycheck throughout the year, and is unavailable for spending until the beginning of the Christmas season. These accounts typically pay very low interest rates - if they pay interest at all. So, financially, it's technically better to go with a standard savings account. But, if you believe that you may have self-control problems (for example, you might be tempted to use the money for things other than Christmas gifts), then the low interest rate might be an okay price to pay to guarantee that there will be money there for buying Christmas gifts. So, self-control problems can explain many phenomena - both those that reflect an overconfidence in our self-control, and those that are designed to deal with our lack of self-control.

Another type of poor statistical reasoning is the "law of small numbers". The law of small numbers states that people are heavily influenced by high-profile, low-probability events. For example, after 9/11, people consistently overestimated the likelihood that planes would be hijacked. People are also heavily impacted by stories about people they know. For example, knowing someone who got a rare disease tends to make you overestimate the odds of people contracting that disease.

7   Conclusions

Naturally, there's a lot more out there about Behavioral Economics that I can't cover here. I'd highly recommend DellaVigna's recent article in the Journal of Economic Literature - "Psychology and Economics: Evidence from the Field". It's a bit technical on some points, but the basic ideas definitely come through. Much of this piece is from the evidence catalogued by DellaVigna. There's also a classic piece by Kahneman and Tversky that started much of the thinking about this field. It's titled "Judgment Under Uncertainty: Heuristics and Biases" - it appeared in Science in 1974. So what is the main "gist" of all this?

First, some of the standard assumptions we make might not be true. This is mostly a "scientific" concern.

On a more practical note, understanding behavioral economics can help us make better decisions - both in our own lives and as we interact with others. For example...

Knowing about anchoring and reference points can make us smarter consumers (as we learn to recognize the marketing "tricks"), and smarter business people (as we learn to use them!).

Knowing about narrow framing can help us remind ourselves not to make that mistake! A dollar is a dollar - regardless what we're spending it on!

Knowing about gift exchanges can help us be better managers, encouraging our employees to work their hardest.

Knowing about overconfidence can help us balance it out, by encouraging us to take a broader, humbler view of our own abilities. It can also help us figure out what we might be able to do to help ourselves do what we shoudl do.

Knowing about the law of small numbers helps us to keep things in perspective - remembering that media attention or happening to know someone isn't enough to change the odds!