

15.301/310, Managerial Psychology  
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**Lecture 7: Behavioral Economics**

Look at decision making, how does this translate to economic theory?  
The way I look at it and explain it to others - All about free lunches – what do you know about free lunches  
-no free lunches

Experiment in infinite corridor at MIT

Free money  
\$1, \$5, \$10, \$50

Free \$1 on the table, how many took it?  
-3, 4%

1 10%  
50 22%

78% of people thought it wasn't worth their time for \$50. They were so suspicious, they thought that something must be going on. The idea is there are no free lunches. If someone is offering me something free, there must be a trick to it.

I say there ARE free lunches, lots out there to be had

No free lunch in economics. Why?  
We assume that everything is optimum.  
If \$ on the street, someone would have picked it up already – must not be real.  
In economics, everything makes sense, everyone is a rational agent, everybody is acting in their own behalf, and therefore there is never free money, no free lunches

However,

Behavioral economics – lots of irrationalities, things we don't do well. Remember examples from last week of irrational behavior?

-not drink lemonade from clean bedpan  
Regret – all kinds of effects

1 perspective is that people are stupid funny odd strange dumb

2 perspective, the one I hope you will embrace - people do not behave optimally  
Therefore, lots of free lunches out there. What do we mean?  
We could create something that will improve things for everybody.

Think about hyperbolic discounting

1 perspective might say, if people eat a lot, want to eat a lot.  
Getting obese – want to be obese

Our perspective. – in order to behave the way we want, we need to create market mechanisms to help people behave the way they want

Can create market mechanisms, good for everyone

Example - Government allowed more savings per year, could help people to save good for society, good for people...

this is the idea of free lunches.

Implications (slide)

Another example - procrastination  
MIT students procrastinate a lot  
Give them specific deadlines improves their performance.  
Another example of free lunch.

Give people deadlines, they take advantage of them. Without them, they don't work as optimally.

## Prospect Theory

Set of ideas, want to walk through how a simple change in assumptions can lead us to a lot of different predictions and ideas about people's behavior

prospect theory, won Nobel prize  
Simple idea, but captures a lot of interesting things about behavior.

Think about difference between value and projected value. How much likely to spend vs value of thing.

Usually, subjective value increases linearly with value.

In prospect theory, propose this kind of shape (slide)

Expected Value vs prospect utility graphs  
Linear vs shape  
What can you tell me about this shape?  
What do you notice?

-diminishing returns on both sides  
-limit  
-something changes at 0, slope at 0

The big question is, if we draw this shape vs the linear curve, what is the difference?

2 functions

Trying to show that slope on gains and losses very different.

Psi for psychology

Diminishing returns

Example for diminishing sensitivity?

-Adaptation

More you see something, get used to it.

-if something very expensive, increase price little, not matter

Diminishing Sensitivity I slide

Walk 15 min to save \$7 on calculator out of \$15?

How many would do it?

Interview w/ Goldman-Saks

Suit - \$1165

How many would do it?

Standard way - 15 min of time worth \$7 or not? Why matter what purchased? Same amount of \$

Calculator or suit

What's happening here?

-we think about money in percentages

If you walk here and not there, it's not that your wealth is increased by a percentage, it's increased by a fixed amount.

Think about money in Proportions, diminishing returns, even though we shouldn't

Deep and important observation.

Psychophysics of money

Relation between objective amount of money and the subjective way we think about this money.

What are implications?

-Not going to sell house w/ \$2 off coupon

-banks give growth in %, not dollar

Look at 5, 6 diff tomatoes at supermarket to see cheaper, .10 here, .10 there

Might buy car, extra \$2000 for seats, w/o thinking as much

\$300,000 house, what's another 50,000?  
\$2 on tomato, 2.50 - that's painful

If always bought expensive tomato, how much more spending over your life, vs leather seats for your car?

People spend more on seats in car than couch in living room

Trying to sell an expensive and a cheap item, which first? Expensive – desensitized

### **Reference Point**

Idea that something strange happens around zero

To illustrate this, give you a gift

Class – every other student chocolate Toblerone, other, deck of cards

Everyone have? Don't eat chocolate yet

Survey, rate each gift

Mark prefer to receive with a star, have with a check mark

stand up and trade – off by 2 cards

how many traded?

Slides - Radar blank planes

Finish in this case? already invested 9 million, invest 1 million to finish? Most people would.

Even if inferior product

-well, might still compete

Yes, there are stories you can think of with the details of the example.

Next slide

Would you invest rest to finish?

.....

Supposed to create the impression that you are going to build something inferior  
From the start, it's like saying, I'm going to create a computer worse than Dell for the same amount of money – nobody would do that. But in the 1<sup>st</sup> slide it is tempting to build – why?

Day 1 – 1million to build plane.

Should consider it a new decision, money gone spent

-example flaw, can design, sell to make back money

-only R&D, not build

Let me give you another example. You pick a major. And right before the last year you discover that you never want to see another course 6 class again in your life, and you are not going to do anything like that. You only need 2 more classes. You are never going to use these things again in your life. There is no way you will ever do anything with it. Would you still continue and finish these last 2 classes? Would you do it?

In general, if you start from day 1, you might say you don't want to do it. But if you already took 4 yrs of classes, and you only need 2 more, you would think about it very seriously. Why do we feel so strongly that if we took 4 years of classes we will be miserable and suffer through the last year just to get it over with?

Double major, last year, decide not want to see course 6 anything again

-don't want to feel done something wrong

-regret, invested so much

Give up on something bad

Have Ticket to basketball in St Louis tomorrow

Live 60 miles away, snows, roads are bad, probability die, dangerous, difficult conditions

Going to drive or not to see the game?

1. paid \$10 for ticket yesterday

2. \$1000 yesterday?

Which are you more likely to drive under bad conditions?

-\$1000

Again, same thing. You spent \$1000, you better go to the game.

What if paid \$1000 Last year? Different than yesterday?

Not seem as binding as yesterday

For free?

No way you would drive.

Conditions under which bought ticket affect willingness to stick with – Time, cost

Influence if continue, not continue

Exxon, dig oil wells, billion \$ per well, 7 years to prepare

Someone spends 7 yrs to decide, how objective will this person be?

Amount of investment is so high, it's hard to overcome.

Anyone from Ohio?

Hal from Athens, Ohio. Ohio U., got deal w/ theater to give discount on winter subscription. Went to each performance to see who came, full price or half price people  
Who do you think more likely to come on these cold, windy, rainy nights?  
-full price  
Do you think any change over time?

-converge over time on lower level  
(people who got for cheaper)  
Immediately, people who paid more are more likely to come.  
Over time, less effect, down to level of people who paid  $\frac{1}{2}$  price

-can you delay effect for people who pay for it?  
Can we delay, like for Gym? Pay, go for a time, then stop going.  
-charge on credit card every month  
What else?

theater example – how else get people to come?

-call and remind  
-cash back  
-say limited seating

Think for example, if they were sent the tickets for each show separately, with the cost printed on them?

Makes sense, give tickets with regular price printed?  
Maybe send regularly, not all at once?

If throw away, more painful

From here, we say current state is status quo. Neutral point  
Every Deviation is painful

### **Losses are steeper than gains**

For this, I would like to give you some more chocolate.  
Whatever you have, put it away, forget you have it.  
Some of you will get another Toblerone  
I don't know if you realize. This is some of the finest Swiss chocolate.  
Fabulous chocolate  
Some lucky individuals will get a bar  
The thing you have to realize, this is really great chocolate.

Some are chocolate owners, some are deprived of chocolate.

Take paper out

Those with chocolate, write minimum amount you are willing to sell the chocolate for  
Without chocolate - max you would pay for this chocolate

selling price:

1 \$5  
6 \$3  
2 \$2  
2 \$1.50  
1 \$1  
1 \$0

Willing to pay:

2 \$2  
2 \$1.50  
7 \$1  
1 .75  
.55  
.01  
.25  
0

You wouldn't pay something unless you get it for free?  
If I give it to you for one penny, you would say no? really?

People w/ choc – worth more  
almost everyone thought worth more than \$2  
People w/o, much less  
How come?

Not have chocolate, gain - much happiness  
Have, Lose - painful

**Loss Aversion** – have something and give it up is very painful

People w/ chocolate, if want to open and share w/ neighbor, fine

Lose \$50/gain \$100 chances .5/.5. would you take this gamble?  
-I will  
Have a coin? Here's one  
Risky choice, have to admit it's a little uncomfortable to take it.  
Which side do you want?  
-heads  
Heads win \$100, tails lose \$50.  
-take checks?

Can do it next class

He Lost

Okay, another gamble

\$500/\$1000

Anyone want to take this one?

-I'll take it

Can't let you, I know I'll get in trouble with the dean

Ok, this looks like very difficult gamble, most of you did not want to take it.

But if we look at it... if you consider this risky, you should never invest in the stock market. This is an unbelievable good risk

-how many times allowed to do this?

Multiple times, take it, why take it if allowed 100 times? eventually you will gain, such a good bet.

If you think about Life as a sequence of choices, if you could take this gamble every day in your life, would you take it? Absolutely yes. would take, gain over time. But every day I ask, you would say no. Over the long run you would gain, but don't take it each day

People are risk averse

So painful to lose, we don't take risks often enough

Ok, would you take this one:

1. I pay you \$240 for sure
2. .25 \$1000 .75 \$0

How about other way?

1. pay me \$240
2. .25 lose \$1000, .75 \$0

How many people...?

Top, wanted sure thing, bottom, wanted risk. Why?

-top gain, bottom loss

Bottom, loss so painful, you are willing to take a lot of risk to overcome that

-risk aversion graph, init loss effects you the most, more loss not much different

Cards/chocolate

Normal, in theory .5 want to trade, but only .25 wanted to in this case.  
If chocolate much better, people w/ cards would want to trade....  
People thought what they had, more value, by sheer fact of owning them

## The Endowment Effect

What are implications of endowment effect?

If intention to sell, no endowment effect

What are other things?

-want people take it home, get attached

Money back guarantee a great idea

Want it bad, take it home, not want to take it back

Duke game, haggle, all stood in line for hours

People w/ tickets, would part for \$2000 – experience of my life, tell grandchildren

People from same pool, not get the tickets, would pay \$100 – excuses

Why, people w/ tickets think so much more valuable than w/o?

-possible you know there are people who would buy for \$2000

Ask question in way to focus on issue

Reasons very different - people very concerned about the value of the experience.

Can test for that

Kids are the ultimate example

Ask parent, how much sell kid for? Very high

Ask them, if not yours, how much would you pay for me – not much

Loss aversion, implications

Affect decisions

Insurance

Think how much people pay to eliminate the one small probability of a car accident. Or house flooding, etc.

Reference point

New reference point shifts the moment you own something. It is part of your endowment. You own it. Giving it up is a loss.

Ebay, bid, you are the highest bidder

Go back 4 days later, “this guys got my...”

Thinking you were the highest bidder made an attachment

Pseudo-endowment effect

Don’t own it, but think of it as yours, pay more for it

Prospect theory

People decide based on the moment, don't look at long term, overall situation

They focus on the local reference point

Over the years, there is more and more evidence for prospect theory.

Exam – no one blew us away

Didn't know how to study, now you do

If you do better on the final, cumulative, we will erase the midterm.

Question style will be similar

Think about this as preparatory exam

## Stock Market

We think about the Stock market most rational part of Western society

People are paid tremendous amount of money to come and do well.

Is it really so rational? Are people really doing so well?

Flew out to "new stock market"

They said, come and tell us what you think.

Know how much was paid in fees in the US last year for making transactions?

\$80 billion NYSE

Unbelievable industry – how much people are making.

Yet we think of this as very rational.

Equity premium slide

If invested \$1 in average stocks on Jan 3, 1926, would be \$1800 in 1998. If invested in treasury bills, would give you \$15.

Would you think anyone should ever put their \$ in treasury bills?

It seems crazy, right?

Nevertheless, many people invest in bonds

Why? What reason?

-if lost the dollar, wouldn't have anything

If you wait to the end it is good, but there are times in between when life would have looked very bleak

If think about loss aversion, go up happy, but not as happy as you are miserable when things go down.

SLIDE

Bond – every year go up, are a little bit happy

Stock – become happy, then become miserable. Happiness pain happiness pain

Going to see more pain than pleasure

What is the cure?

Don't look

If you made a decision, it is for sure that looking at stock will make you unhappy. No matter how much you make, you will lose on some days, be miserable on some days

Going to lose on some days. Don't look, look once a year

Think about last 3 years, people looking every day.

Look every day is a recipe for suffering

Researchers at NYU

Zur Shapira – SLIDE

Professional traders take more risk if ended previous day in loss.

Take long shots in last hour of day if day going to be a loss at 3pm

These people are trained to gain over time

Nevertheless, affected day to day

People who sell Stocks made money 2x rate as losers, stock

Except in December, for tax reasons

Why hold on to loosing stocks?

Buy Google today for \$170, down over next 2 months to \$100, would you sell it?

Sell, realize your loss.

If I sell it, I've lost \$70. if I keep it, not a loss yet.

If lose, people willing to lose more

Just hope to get to break even point.

Specific mental accounts for particular stocks

Prospect theory

Probability function, not have time to talk about it

The main thing I want you to remember is this shape.

Diminishing sensitivity, loss aversion, reference point

Finally, main lesson for today:

Last time - People behave different than standard economics theory

Prospect Theory gives you a nice way to think about how value functions relate to subjective value and objective value and thinking about what people will, will not do.

Nice thing about prospective theory – see how one changing assumption has lots of implications- loss aversion, endowment effect, ref point, etc.

Wed: descriptive statistics, useful for your project

Mon: psychology of \$

Draft of paper due today, to your TA