

PRINCIPLES OF BEHAVIORAL ECONOMICS

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Week 31

Lecture 31

Hello everyone, this is the course on Principles of Behavioral Economics, Lecture 31. So, with this lecture, we are going to begin the fourth topic: mental accounting. This is the first module on mental accounting, and we will introduce the concept of mental accounting—what it primarily is. All organizations, from General Motors down to single-person households, have explicit and/or implicit accounting systems. These accounting systems often influence decisions in unexpected ways.

We will present a few anecdotes, each illustrating a type of behavior where a mental accounting system induces an individual to violate a simple economic principle. Now, these anecdotes are taken from the references mentioned below, but you can always relate similar instances or situations that happen to most of us many times. So, the first anecdote says that Mr. and Mrs. L and Mr. and Mrs. H went on a fishing trip in the Northwest and caught some salmon.

They packed the fish and sent them home on an airline, but the fish were lost in transit. They received \$300 from the airline. The couples took the money, went out to dinner, and spent \$225—they had never spent that much at a restaurant before. So, what is there to discuss here specifically? Anecdote 1 violates the principle of fungibility.

So, we will first define what fungibility is. The characteristic of fungibility relates to the substitutability of different budget categories. If budgets are fungible, overspending in one category can be compensated by underspending in another category and vice versa. Alternatively, this means you can spend the amount of money you have on anything. That makes perfect sense, but

if we go back a little earlier—a few decades ago, maybe a few years ago, or even in some households today— you would find that some money is earmarked for specific expenditures when there was no use of Paytm, UPI payments, ATM payments, or card

payments; mostly, cash transactions were used. Even 10-15 years ago, people would withdraw cash from the bank and then keep it in separate envelopes.

They were marked for different spending. For groceries, suppose one household decides to spend no more than 5000 in a month. For vegetables, there is an amount to be spent—say, 2000, 3000, whatever. So, you generally try to confine your expenditure within that limit. And you do not overspend or underspend.

Or, in case you are able to save some amount of money from any particular account, then that is treated as savings. It is not that I could save some money from the grocery account, so I am going to spend it on the fruits and vegetables account, or on clothing or something. So, of course, as you understand, when the budget is more stringent, then there are more violations of fungibility. People actually need to be more particular about their spendings that on which head they are spending how much now, actually a violation of fungibility here refers to the fact that when we do not consider any levels associated

or we consider that levels are associated with money so the amount that is earmarked for grocery should be spent on grocery not more than that but when there is no such thing specifically when we have too much of online transactions where we are not able to track our transactions immediately and directly unless and until we write them down somewhere then actually you have no idea about how much you are spending on grocery how much you are spending on vegetables clothing furniture or house improvements on a monthly basis, on an annual basis and things like that so money probably might have become more fungible But if you have budget categories, then money is not fungible.

According to the neoclassical model, if the marginal utility of a good or service is greater than its marginal cost, then it should be worth buying and therefore complete fungibility should exist with no need for budgeting. That is what the neoclassicals say. Alternatively, the neoclassical model says that money is not supposed to have labels attached to it. So, money is completely fungible.

Yet, the couples behave the way they did because The \$300 was put into both "windfall gain" and "food" accounts. The extravagant dinner would not have occurred had each couple received a yearly salary increase of \$150, even though that would have been worth more in present value terms. Next, talk about a second anecdote. Mr. and Mrs. J have saved \$15,000 toward their dream vacation home.

They hope to buy the home in five years. The money earns 10% in a money market account. They just bought a new car for \$11,000, which they financed with a three-year car loan at 15%. So what we see is that they have saved up an amount of \$15,000. They wanted to buy a car for \$11,000, but instead of using this money, they borrowed from the market at a high interest rate of 15%.

Their money is earning 10%, but they are borrowing from the market at an interest rate of 15%. Now, when you already have some amount with you, you are not spending it to purchase the car. Instead, you are taking a loan from the market, because that amount is actually earmarked for a particular purpose, right? So here, the violation of fungibility is caused by the household's appreciation for their own self-control problems.

They are afraid that if the vacation home account is drawn down, it will not be repaid, while the bank will see that the car loan is paid off on schedule. So the point is that, besides the concept of fungibility, here we bring in another aspect of mental accounting, and that is how to exercise control on one's self. Anecdote 3. Mr. S. admires a \$125 cashmere sweater at the department store.

He declines to buy it, feeling that it is too extravagant. It's very expensive. Later that month, he receives the same sweater from his wife for a birthday present. He is very happy. Mr. and Mrs. S have only joint bank accounts.

So what it implies is that, specifically, the money that he refused to spend was actually spent by his wife, and it is drawn from the same account. So financial implications are the same in both cases, whether he would buy it or his wife buys it. But still, he could not buy it for himself, while when his wife gave it to him as a present, he was very happy. So what's going on? This illustrates the curious fact that people tend to give as gifts items that the recipients would not buy for themselves, and that the recipients, by and large, approve of the strategy. So the recipients are not buying it for themselves, but when others are buying for him or her, then they are actually approving of the strategy.

Neoclassicists do not say so. They say that we must gift something which people are already purchasing, something they have already used. That kind of thing should be given as a gift. So mental accounting is trying to understand, basically, how our mind processes different transactions, purchases, etc. So from that perspective, mental accounting is defined

as the set of cognitive operations used by individuals and households to code, categorize, and evaluate financial activities. Thus, mental accounting encompasses a broad range of human behavior and is not just restricted to financial activities. Like prospect theory, mental accounting theory or MAT was developed to overcome descriptive anomalies in the standard model and it incorporates the basic elements of prospect theory in its formulation. So, the descriptive anomalies in the standard model, in the sense that

the standard model is, of course, normative, but then it fails to describe certain behaviors. So those descriptive anomalies are, again, another attempt by mental accounting to address them. Perhaps the easiest way to define mental accounting is to compare it with financial and managerial accounting as practiced by organizations. Accounting is the system of recording and summarizing business and financial transactions in books, and analyzing, verifying, and reporting the results. So this is how we can formally define accounting.

Of course, individuals and households also need to record, summarize, analyze, and report the results of transactions and other financial events. So, the way accounting is done by organizations, individuals and households may also need to do the same thing. They do so for reasons similar to those that motivate organizations to use managerial accounting. And the purpose is to keep track of where their money is going and to keep spending under control.

Of course, it also adds to the fact of where the money is coming from, how we are spending it, and how we can control our expenditures. Mental accounting is a description of the ways they do these things. So, the next question is how people perform mental accounting operations. Three components of mental accounting receive the most attention here. The first captures how outcomes are perceived and experienced, and how decisions are made and subsequently evaluated.

For example, Thaler presents an anecdote such as, A friend of mine was once shopping for a quilted bedspread. She went to a department store and was pleased to find the model she liked on sale. The spreads came in three sizes: double, queen, and king. The usual prices for these quilts were \$200, \$250, and \$300, respectively.

But during the sale, they were all priced at only \$150. So regardless of the size, all were priced at \$150. My friend bought the king-size quilt and was quite pleased with her purchase. Though the quilt did hang a bit over the sides of her double bed. The consumer's choice can be understood by incorporating the value of the deal into the purchase decision calculations.

So here, the individual purchased an oversized quilt just because she liked the deal. So these kinds of things are also addressed by mental accounting and given certain terminology. A second component of mental accounting involves the assignment of activities to specific accounts. Both the sources and uses of funds are labeled in real as well as in mental accounting systems. Expenditures are grouped into categories like housing, food, etc.

And spending is sometimes constrained by implicit or explicit budgets. So budgets actually play an important role in mental accounting. Funds to spend are also labeled both as flows, which are like regular income versus windfalls, and as stocks, like cash in hand, home equity, pension wealth, etc. So in economics, flow and stock concepts are very common. So in a similar fashion, the funds are also categorized as flow and stock concepts.

Maybe we are not doing it deliberately or consciously, but it is there at the back of our minds. When mental accounting does the analysis, we realize that actually, some such things go on in our minds. So in this context, another anecdote by Thaler. A few years ago, I gave a talk to a group of executives in Switzerland. 'I' refers to Thaler himself.

After the conference, my wife and I spent a week visiting the area. At that time, the Swiss franc was at an all-time high relative to the US dollar. So the usual high prices in Switzerland were astronomical. My wife and I comforted ourselves that I had received a fee for the talk that would easily cover the outrageous prices for hotels and meals. Had I received the same fee a week earlier for a talk in New York, though,

the vacation would have been much less enjoyable. So basically, what he tries to say is that since he received an amount because of the talk he delivered, that was expected to take care of the expenditures because it was considered a windfall. The similar windfall, even if had been there but at a different place and time, they would not have related it to the expenditures they were incurring in Switzerland.

So getting it in Switzerland and spending it in Switzerland—that windfall, that additional amount to be spent on additional expenses—was absolutely acceptable; otherwise, they would have found it difficult to manage the expenses in Switzerland. The third component of mental accounting concerns the frequency with which accounts are evaluated, a concept labeled as choice bracketing. Accounts can be balanced daily, weekly, yearly, and so on, and can be defined narrowly or broadly. So how these accounts are balanced, evaluated, or defined is basically dealt with in choice bracketing.

Basically, how your choices are bracketed. So narrow framing is an important concept here. We'll be talking about choice bracketing later. An analysis of dynamic mental accounting shows why this is excellent advice in many situations involving decision-making under uncertainty. Overall, mental accounting helps us develop a better understanding of the psychological processes that underlie choices and decisions.

Thaler's landmark article, 'Mental Accounting and Consumer Choice,' published in 1985, uses the concept of mental accounting to move further toward a behaviorally based theory of consumer choice. He says that mental accounting has many implications and applications in the field of marketing. The mental accounting theory has three key features. First, the utility function is replaced with the value function from prospect theory and then extended to apply to compound outcomes. So, this utility function is replaced with the value function from prospect theory.

Mental accounting actually draws heavily from prospect theory. Second, price is introduced directly into the value function using the concept of a reference price. The new concept of transaction utility is developed as a result. We also have a concept of acquisition utility along with transaction utility. Third, the normative principle of fungibility is relaxed.

Numerous marketing implications of the theory are derived. The theory is also used to explain some empirical puzzles. Now, the normative principle of fungibility implies that neoclassical theory suggests this should be the norm—that money is fungible. That basically solves, or they say that a rational individual would treat money as completely fungible. But this assumption is relaxed in mental accounting, in the sense that mental accounting understands money is not fungible.

People have spending categories, regardless of whether you are in an era of highly digitized transactions or when transactions were not as digitized. Nevertheless, we have some mental account of what is coming to us, how it is coming to us in terms of funds and finances, and then how we are spending it. So this is how, or the theory of mental accounting relaxes the assumption of fungibility. The primary reason for studying mental accounting is to enhance our understanding of the psychology of choice.

In general, understanding mental accounting processes helps us understand choice because mental accounting rules are not neutral. That is, accounting decisions such as which category to assign a purchase to, whether to combine an outcome with others in that category, and how often to balance the books can affect the perceived attractiveness of choices. They do so because mental accounting violates the economic notion of fungibility.

Money in one mental account is not a perfect substitute for money in another account, which is basically the definition of fungibility. Because of violations of fungibility, mental accounting matters. Now we wish to understand the decision-making process of an individual or a household interacting in an economic environment. How does a person make economic decisions such as what to buy, how much to save, and whether to buy or lease an item? And how are the outcomes of these financial transactions evaluated and experienced?

So we have presented certain anecdotes, and I'm sure you will be able to associate with your experiences that similar instances have happened in your life as well. We all experience such things. I know a friend of mine. When we were shopping together, she generally wears size 37 footwear. Now in Woodland, generally, this year-end sale was going on, so a pair of sandals was available at a substantial or lucrative discount, but it was only size 36 that was available.

So she purchased it, though it was fitting her somewhat tight, and since wearing it was pretty much uncomfortable, it's been several years—maybe seven to ten years—she has hardly used it. But Woodland shoes are generally pretty sturdy, and as a result, the pair of sandals is actually still in good condition. She is not able to throw them away. She is not able to use them much either. So what is the right time to throw that pair of sandals away?

We will talk about that also in mental accounting—when people feel or think that it's time we can throw a pair of sandals that have been lying with us for a long period of time without being used. It has occupied space in my shoe rack for a substantial time, so now it's time I can throw it out. But this is a decision. The deal is very attractive, so we go for that kind of purchase. These are all part of mental accounting. Mental accounting helps us in answering those kinds of situations—why do we end up buying something even though later on we find it difficult to utilize?

In order to frame the theory, mental accounting uses a certain framework. So, again, we need to frame gains and losses. It heavily draws from the prospect theory, as I have already mentioned. So, the value function of prospect theory can be thought of as a representation of some central components of the human perceived pleasure machine. It has three important features, each of which captures an essential element of mental accounting.

So, we begin with the different features of the value function in prospect theory that we have already discussed in the previous topic. So, the first one is that the value function is defined over gains and losses relative to some reference point. The focus on changes rather

than wealth levels, as in expected utility theory, reflects the piecemeal nature of mental accounting. Transactions are often evaluated one at a time rather than in conjunction with everything else.

So, of course, there are situations where we integrate or segregate, but there are always reference points for processing a particular transaction. Second, both the gain and loss functions display diminishing sensitivity. We have also learned about it while studying prospect theory. So, the gain function is concave, and the loss function is convex. If you happen to remember, we had an S-shaped function like this.

This is in the domain of gains, and this is in the domain of losses. This is a concave function. This is a convex function. This feature reflects the basic psychophysical principle, also called the Weber-Fechner law, that the difference between \$10 and \$20 seems bigger than the difference between \$1000 and \$1010, irrespective of the sign.

And finally, the third feature is loss aversion. Losing \$100 hurts more than gaining \$100. Gaining \$100 yields pleasure. So, as you remember, the slope of the gain function is much lower than the slope of the loss function. The loss function is steeper.

So, this is what is implied here. If I take x here, if I take x here, and we are measuring values here. So, this is x , this is $-x$. This is the amount of Vx . And this is V minus X . And of course, this is negative, so $-V$ minus X . And what it says is that this is actually much greater than this.

So, the influence of loss aversion on mental accounting is enormous, as will become evident very quickly. So, with this, I conclude this module on the introduction to mental accounting. Next, we will proceed further with different aspects of mental accounting. Thank you.