

PRINCIPLES OF BEHAVIORAL ECONOMICS

Prof. Sujata Kar

**Department of Management Studies
IIT Roorkee**

Week 05

Lecture 05

Hello everyone, this is Lecture 5 of the course on behavioral economics. Today, we are going to study methodology, types of empirical studies, or primarily the types of methods used in behavioral economics. So, first of all, we will be talking about what has traditionally been the approaches adopted by economists and psychologists and a comparison between them.

Economists and psychologists have traditionally used different empirical methods, reflecting their distinct disciplinary focuses. Economists have relied more on field studies, while psychologists have favored experimental studies. Recent trends show a shift in economics toward applied analysis and a broader range of empirical methods. There are two major types of empirical studies in behavioral economics. First, field studies.

These are conducted in real-world settings, observing behavior as it naturally occurs. Economists often use field studies to analyze market behavior, policy impacts, and group dynamics. So, basically, these methods are more commonly used or preferred by economists. The other type of study is experimental studies. These are conducted in controlled environments, allowing manipulation of variables to test hypotheses.

Most often, psychologists use experiments to study individual motivation and decision-making processes. Before discussing each of these in detail, it should also be mentioned that either type of study can be between-subjects or within-subjects. So, talking about between-subjects experiments or studies, these actually compare different groups of subjects, each exposed to different conditions or tasks. For example, one group states preferences for rewards a week from now,

another group states preferences for rewards a month from now. So, basically, different groups of individuals are subjected to different kinds of treatments, and the results are compared. On the other hand, when we talk about within-subjects, it examines the same subjects under different conditions or tasks. So, the same set of individuals goes through different tasks or conditions. For example, subjects

state preferences for rewards both one week and one month from now. The choice between these designs depends on the research question and practical considerations. So, it is primarily determined by the research agenda, how the objectives are framed, and what kind of methodology suits best. It is observed that economists have tended to rely more on field studies, while psychologists have relied largely on experimental studies.

The reasons are, first of all, a focus on behavior. Economists study what people do. For example, we have a theory called the theory of revealed preference. So, revealed preferences in purchasing behavior primarily indicate that choices or preferences are revealed through purchases, right? So, economists are more concerned about what people do and not exactly why people do so.

Psychologists, on the other hand, focus on why people behave as they do. They try to understand the motivation and the cognitive processes behind any particular activity or act. The second reason is the group behavior of markets. Economists prioritize studying group behavior. For example, markets and industries, over individual behavior. Economists also study individual behavior, but individual behavior in market settings can also be studied.

Other than that, when we further aggregate from individuals to firms, markets, and then industries, of course, field studies are more appropriate and suitable compared to experimental studies. So, studying group behavior and markets is facilitated better by field studies. The third reason is the challenges with experiments. Economists historically viewed experiments as impractical or unethical in real-world economic contexts.

For example, governments may avoid experimenting with tax policies or educational subsidies due to potential risks. The idea is that experimenting too much with taxes or subsidies is considered a threat to political entities. They do not want to tamper much with the existing systems because that may lead to losing votes, and as a result of which governments may avoid experimenting with tax policies or subsidies. Although observational studies do not allow the kind of manipulation of relevant variables that is possible in experimental studies, economists have often been able to overcome the

resulting problems by using sophisticated statistical or econometric techniques that enable them to isolate the effects of specific variables.

For example, there are econometric methods which try to basically filter out the impact of particular variables. So we use more advanced mathematical techniques. Several variables and their impacts are controlled for in order to identify or focus more on the impact of certain variables. So field studies might have the disadvantage that they will have the impact of a large number of factors, even when those factors are not intended to be considered by the original study. But then mathematical models or econometric methods help economists to filter out

the impact of the factors that are of importance. Field studies involve observing real-world decisions made by individuals in natural settings. For example, field studies examine choices between expensive but energy-efficient appliances and cheaper alternatives. So, for example, one can always observe what kind of appliances people generally purchase, given different kinds of information provided to them by shopkeepers or sales representatives. So, there are ratings like 5-star, 3-star, 4-star, 2-star, and single-star on electrical appliances.

That talks about the energy efficiency of those appliances. The prices also vary, and the different features of those appliances also vary. But given the information on energy efficiency, one can always try to track what kind of preferences individuals tend to have generally. Betting choices in horse races, Investment decisions, for example, buying and selling stocks and bonds.

So these are examples of field studies. On these aspects, field studies can be considered in the sense that we can observe how people actually behave in a natural environment. Consumers' responses to promotional offers in shopping contexts. We now consider an example of a field study conducted in 1998 in Israel.

In this field study, the economists considered day care systems. It was observed that parents were generally late in picking up their children from the day care system, and that was causing a lot of inconvenience. So what they did was they selected certain day care systems and then imposed some fines on the parents who were coming late. So, on this diagram, we have two lines.

The blue lines represent those that did not have fines imposed on the parents or the daycare systems that did not go for imposition of fines. And the red line represents the

daycare systems that fined parents who were coming late. So, fines were introduced at this point. Prior to that, there were movements—ups or downs—in parents arriving late in both daycare systems, and fines ended here. So, what is the observation during this period? It has been observed that we are measuring the average number of parents arriving late on the vertical axis.

So, it is observed that the average number of parents arriving late increased substantially. Previously, the average could have been somewhere here; now, the average is somewhere here. So, the daycare system that imposed fines, observed that parents were arriving much late as compared to when there were no fines for coming late. So, what is the observation? The observation is that lateness has a price and can be purchased, like fruits, vegetables, etc.

So, the parents were no longer burdened by any moral obligations. They were not feeling guilty. They thought that fine, I can now arrive late because I'll be paying a price for it. So, I'm essentially purchasing the additional time provided by the daycare workers. And that appears pretty much legitimate.

So market-like incentives actually crowded out social preferences. When they were coming on their own on time, it was because of social preferences—they were thinking about how they should behave in a social context. So thinking about others and society is broadly understood as social preferences. Arriving on time to pick up my child is my duty toward society, and as a result, they were arriving roughly on time. Some days they were slightly late, but when prices are introduced, it almost behaves like a market.

So now you can purchase their time. So that's why it is said that market-like incentives crowded out social preferences. And interestingly, what was observed is that even when fines ended, parents continued coming late. So in those daycare systems, parents continued coming late even after fines ended. Now they are habituated to it—some parents grew accustomed to coming late and probably did not mind paying a fee for it.

They probably wanted the system to continue with a payment system for coming late, and as a result, they continued this behavior, whatever be the intentions. Now, from these observations—or from this experiment or field study—certain things were observed by the economists. But when the fines ended and parents were still coming late, economists had no clear answer as to why they were coming late. We can make certain conjectures or assumptions, like they probably wanted the fines to be retained. They wanted the daycare systems to fine them rather than withdraw the fines.

So that is what we assume because that suits their convenience. They got habituated to it, but as such, we cannot understand that why actually? We do not have information to know exactly why they were still coming late. So this is what is the difference between economic approach and a psychological approach that economists just observe what is happening as opposed to psychologists.

They also try to understand why certain things are happening, why people are behaving in certain manner. There are certain advantages of field study. First of all, high ecological validity. These results reflect real-world behavior. Results from field studies reflect real-world behavior as they are based on actual decisions.

So field study actually does not go for any manipulation. So that perfectly reflect how people should behave or how people generally behave. No concern about artificiality as the data comes from natural setting. However, there are certain challenges with field studies also. First of all, conceptual validity.

Field studies may not always measure what they intend to measure due to confounds. So, what are confounds? Confounds occur when the result or reported value is a conflation of two or more effects which are not, or cannot be, isolated from each other. So, there are certain things where we act in a particular manner when multiple factors work on us or multiple thought processes influence us. For example, if there is a class very early in the morning, people may not attend it because there could be several reasons. First of all, the class might not be interesting.

The second thing is that the content of the class might be easily available from other sources. Other factors could be that the students feel sleepy early in the morning. It is possible that they do not get food in their hostel mess before coming to class, or there is too much of crowd, and so on. So, there could be a large number of factors that impact the behavior of a particular individual or a group of individuals. Now, confounds mean that all of them act together. How do you separate them if you actually try to focus on one particular aspect?

For example, as the teacher of the class, I try to find out if my content is very boring or if my delivery is very boring, so that the students are not coming to the class. How to find out? Just by observing how many students are coming to the class is probably not sufficient. I need to find out what the other factors are that are impacting their decision to come to the class or not come to the class. So, these are confounds, and as a result, conceptual validity could be lower in the case of field studies.

If we are not able to separate out the impact of several other factors affecting a particular decision. So, another example could be buying an inefficient but cheaper appliance. It may not indicate high discount rates for future cost savings. This implies that if I choose an efficient appliance, then I will achieve some cost savings in the future. But if I choose a cheaper and inefficient appliance, then I will not be able to save much on costs in the future.

So now, if I am not interested in saving much on costs in the future, this implies that we are discounting future cost savings. But that might not be the case. There could be several factors that influence my decision. So, what are these factors?

The factors may include ignorance of future cost savings. I might not be aware of how much cost savings a better-rated or a more efficient appliance can give me. Disbelief or uncertainty about future savings. Even if I am told that I will save this much money through reduced electricity bills, I may not actually believe it. Cash constraints preventing higher upfront costs.

For example, I might not have much money right now to buy a more expensive appliance, and that's why I settle for a cheaper one. There could be other hidden costs related to more expensive appliances. For example, maintenance. I could go for a higher-rated or more efficient appliance, but then a more expensive appliance will also have more expensive parts, as a result of which maintenance will be higher.

The servicing could be more expensive. So, as a result, overall, I can foresee that many more expenses may arise, and as a result, I settle for something cheaper. So, a lot of factors are actually contributing to my decision to go for a cheaper and less efficient appliance. And it's not only the fact that I am not bothered about saving much cost in the future.

The decision can be a random one or an inability to grasp the future advantages as well. And as a result, I go for a cheaper but less efficient appliance. Now, we have talked about the fact that economists prefer field studies and psychologists prefer experimental studies. We are yet to talk about experimental studies, but then there has been a rapprochement.

The methodological divide between economists and psychologists led to a significant separation between the two disciplines for much of the 20th century. Reconciliation began in the last 25 years, driven by psychologists studying economic decision-making in economic psychology. So, psychologists also started taking an interest in the field of

economic decision-making. On the other hand, economists also started adopting experimental methods influenced by Kahneman and Tversky, but many contributions

in the field of experimental economics have come from Vernon Smith, as a result of which experimental economics is now a recognized sub-discipline within economics. Now, talking about experimental studies in psychology and behavioral economics, experimental studies involve manipulating real or hypothetical scenarios to observe subject behavior. There are certain advantages. First of all, greater control over variables allows direct manipulation to determine their influence. So, I can design my experiment in such a manner that the variables of concern or focus are actually better controlled

and we direct our analysis or experiment to understand the impact of those variables better. For example, subjects bet more against a shabbily dressed, diffident opponent than a confident, professionally dressed one, even though outcomes are based on chance. So, if people are made to play a game which is completely a game of chance, it has been observed through experiments that subjects would be betting more against a shabbily dressed, diffident opponent

and they would be more favorable to a confident, potentially professionally dressed one. Now, there are different types of rewards in experiments. First of all, real rewards. This motivates subjects to behave as they would in real life, increasing predictive accuracy. On the other hand, there could also be hypothetical rewards.

Hypothetical rewards are like I am told that I would be given 1000 rupees, how I am going to react to certain situations or I am told that I am going to lose 1000 rupees and how I would again react to certain situations. So, these are hypothetical scenarios. Hypothetical scenarios are accused of not probably taking out or eliciting the best possible behavior but the advantages are, it offers flexibility enabling studies with large rewards losses or long time delays in inter-temporal studies.

Since I am not actually giving away the money, most often experiments with real rewards are actually very expensive. So hypothetical rewards help us in conducting large experiments. Because I can offer small rewards, I can offer large rewards, I can offer rewards to thousands of people because everything is hypothetical. If some such studies are to be conducted using real rewards, the studies become so expensive that it's very difficult to conduct such studies. Kirby and Marakovic compared discounting under both kinds of situations using 30 permutations of 5 different rewards and 6 different delays and concluded that the discount rates are lower for hypothetical rewards.

So, what has been observed is that, of course, real rewards and hypothetical rewards might at times come up with or yield different results. And as a result, they have observed that with hypothetical rewards, discount rates are actually somewhat lower compared to when people conducted experiments with real rewards. Now, talking about the design and interpretation of experiments, experiments can reveal insights into factors influencing behavior that are impractical to study observationally. However, economists often criticize behavioral experiments for flawed experimental design, interpretation of experimental results, and the treatment of assumptions. Now, I will be talking about these three in detail.

So first of all, talking about experimental design issues. There are three main issues here. These relate to the use of financial incentives, the use of deception, and the lack of control. So first of all, talking about the use of financial incentives. Economists argue financial incentives ensure real-world-like behavior and cognitive engagement.

Previously, we have talked about the importance of incentives in the neoclassical tradition. Economists place a lot of value on money or monetary incentives, and as a result, economists are in favor of financial incentives to ensure real-world-like behavior. On the other hand, psychologists counter that incentives may distort the results by vitiating the intrinsic interest that subjects may have in participating in the experiment. So if there are actual economic incentives or monetary incentives, rather,

then that would at times may overshadow the actual interest of the subjects. They would be more interested in participating in the game or the monetary incentive may influence their decision making and participation in a particular experiment. So, now talking about evidence, there is actually mixed evidence on earned and unearned rewards. We actually cannot always say that monetary incentives are going to distort individual's behavior or on the other hand, there are also evidences that monetary incentives may actually distort particular results or individual's behavior towards the experiments.

Now, we talk about the second point under experimental design issue which is the use of deception. This is very common in psychology. 30-50% of studies in leading journals are found to use some form of deception in order to conduct experiments. The deception or use of deception is justified for creating situations that they would not otherwise be able to observe under normal circumstances. And then the second point is that masking the real purpose to prevent strategic behavior.

For example, If individuals are told very directly about the purpose of the experiment, at times that may influence their behavior. So it is at times desirable to hide the real intention behind conducting a particular experiment. That is why masking the real purpose comes into existence. And the first point is that experiments need to create situations that they would not otherwise be able to observe under normal circumstances.

So the experiments that could not be conducted under field studies are actually conducted in laboratory experiments, right? But the problem is that subjects may become cynical knowing deception is common, requiring researchers to find naive participants, for example, freshman students. What it says is that when it becomes common knowledge that psychologists conduct experiments which involve a lot of deception, then the knowledge of being deceived actually prevents more and more people from participating in experiments. As a result, that becomes a discouraging factor, and psychologists may find it very difficult to identify or attract individuals to take part in experiments.

And as a result, they need to depend, to a large extent, on freshman students, that is, those who are coming to the campus for the first time, those who are new and those who do not have information about how experiments are conducted. Experiments involve deception and things like that. The third point is lack of control. Economists criticize behavioral experiments for insufficient control, leading to confounded results.

For example, the endowment effect. Some studies show a strong endowment effect. Sellers demand twice what buyers offer, while others show none, depending on experimental protocols. So at times, we generally understand that experimental studies tend to have better control. But then there are also situations where there could be a possibility of a lack of control.

In that case, the results would definitely be flawed. Now, coming to the second issue—the issue with the interpretation of experimental results—a key challenge is ecological validity. Can lab findings be generalized to real-world behavior? Most often not, because lab-based experiments, first of all, deal with a very small number of individuals, and the behavior could be extremely subjective behavior or an expression of their subjective understanding.

This cannot be generalized to a large number of people. So, unlike physical sciences where laws are universal, human behavior is influenced by context, making extrapolation very difficult. Other than that, factors affecting behavior in the lab differ from behavior in the field. The presence of moral and ethical considerations, the nature and extent of

scrutiny of one's actions by others, the context in which the decision is embedded, and self-selection of the individuals making the decision, along with the stakes of the game.

All these factors actually affect behavior in the lab and differ from their behavior in the field. The moment one enters a lab for an experiment, then of course, the person also understands that their activities are being scrutinized; they are being observed. So their attitude changes—they become more careful. On the other hand, those who are conducting the experiments are also under certain moral and ethical considerations. So, as a result, the context in which decisions are being made might not be a completely natural environment or natural context.

And accordingly, there would be a large number of deviations. There could be a large number of deviations, which otherwise you would not observe in the context of field studies. Self-selection of the individuals making the decisions is also supposed to have some impact on their behavior in their experiments. And finally, the stakes of the game. If the stakes of the game are large,

then the decisions might be different at times compared to when the stakes of the game are small. So when large rewards or large losses are present, then people may behave very differently compared to when the amount of reward or the loss associated with the experiment is small. Then there is criticism for a tendency to be overzealous in making far-reaching claims. Experimental economists are criticized for making broad claims based on limited data. So generalization is not desirable in the case of experimental studies.

Nevertheless, it has been observed that experimental economists make broader claims based on pretty slender data. Another accusation is cherry-picking of results to support theories while ignoring contradictory data. The results that suit your purpose, you report those. The ones that do not suit your purpose, that do not explain what you intended to observe, you do not report those. So, talking about the third issue with the treatment of assumptions, Fudenberg observes that the normal approach in developing theories in behavioral economics has been

to modify one or two assumptions in the neoclassical model in the direction of greater psychological realism. However, relaxing one assumption can have a knock-on effect on other assumptions, leading to inconsistencies in the overall set of assumptions. And that is why he suggests that modelers need to take all the assumptions as a set and see how many need to be modified to end up with a new set of assumptions that is self-consistent.

Now, we talk about the purpose of study: field versus experimental studies. The choice between field and experimental studies depends on the study's purpose, first of all.

So, that includes a few factors. First of all, parameter estimation. Field studies are more appropriate for estimating real-world parameters. For example, price elasticity of demand. Advantages: high ecological validity, reflecting actual behavior in natural settings.

The second point is theory testing. Experimental studies are better suited for testing competing theories. Advantages are control, replication, and manipulation, which allow clear separation of predictions and identification of the best-fitting theory. Besides field studies and laboratory experiments, there is something called extra-laboratory experiments.

It has been recently proposed that empirical studies should be reclassified to introduce a third category of study, which is extra-laboratory experiments. This is basically a combination. It is a hybrid approach combining elements of field studies and experimental studies. These are conducted in the field while controlling for various factors to investigate the effect of a single variable. These are performed without subjects' awareness, ensuring ecological validity.

So, it has certain characteristics of field studies, but it is often used as a follow-up to laboratory experiments. So, first, laboratory experiments are conducted, and then extra-laboratory experiments are conducted in the field, so that whatever has been the drawback of laboratory experiments would be reflected in the extra-laboratory experiments, which are conducted in the field. So, that can also help us understand the validity of the laboratory experiments.

So, the advantages are there would be higher ecological validity because subjects behave naturally, as they are unaware of being observed. There would be control over variables because researchers can manipulate specific factors to study their impact, as some initial research would also be conducted in laboratory experiments. We can also go for larger subject pools because it enables broader and more diverse participation than lab experiments. And finally, policy testing. These are useful for evaluating the effectiveness of policy interventions in real-world contexts.

So, with this, I close the module on methods—the types of experiments conducted in behavioral economics. These are the two primary references. Thank you.