Choice, Preference, and Demand

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8/12/2010, Revised: 1/5/2011

1 Human Action, Choice, and Preference

It is undeniable that "humans act". By this, I mean that humans make purposeful choices.[1] This fact carries profound implications, and gives rise to other phenomena that we recognize as important: preference and demand.

To get a first handle on the implications of human action, consider what it means to say that someone makes a choice "purposefully". Quite simply, it means that they do it with a purpose in mind. Put differently, they have an "end" that they'd like to attain. One can think of it this way: The person is in some present situation and can visualize two potential futures. In one, they take one course of action. In the other, they take a different course of action. For example, I may be sitting at my computer on Hulu.com. I can imagine two possible futures: In one, I am watching Glee on my laptop. In the other, I am watching Stargate: Universe. Now, I must decide: do I want to live in a world in which I am watching Glee, or one in which I am watching SG:U? Once I decide which future I prefer (that's an important word! "preference"), I should take some action that I think will bring about the desired future. In this case, I click on the appropriate link on the website.

This process demonstrates the structure of an action: a person applies a *means* to attain an *end* according to an *idea*. That is, there is some purpose - some end - in the actor's mind. They have an idea how to attain it.[2] That idea entails the use of some means. In this case, the end is watching one show or the other. The idea is that clicking on the appropriate link will lead me to attain that end. The means is clicking on the appropriate link.

A few important points. First, the concept of "preference" is bound up in the concept of action. In some loose sense, it might be true that people have "preferences" which have no impact on their actions. (For example, if I don't believe that there is any course of action I can take to impact the weather, then my preference for sun over rain doesn't impact my actions.) However, economists care little about these cases. So, when an economist discusses "preferences",

[1] Which is not to say that every behavior is a choice, or that every choice is purposeful!

[2] For our purpose, it doesn't necessarily matter if the actor is correct in their idea. They might want to fly and believe that flapping their arms will help them to. Error is an important concept in economics - but simply being in error doesn't mean that the action is any less an "action". It's just unsuccessful at attaining the end.

he is generally concerned about choices that a person makes - or might make, under the right set of circumstances.

Second, it is a contradiction to say that someone chose something other than they preferred ex ante (that is, "given the information they had before they saw the outcome"). The act of choosing is bound up with preference. Now, it is possible that, ex post (that is, after seeing the result), the person may regret their decision. For example, if I click on Glee and find that it's just a terrible episode (inconceivable!), I might wish that I had made the other choice. But, given the information I had when I made the choice, I still chose what (I thought) I preferred.

2 Deriving Demand

One of the great purposes of microeconomics is to explain prices, and how they come about. The typical way of doing this now is from "demand and supply". We'll go into more detail about equilibrium between supply and demand and how this results in actually observed prices. For now, focus on the connection between human action, choice, and preference, and the decision to buy a good at a particular price.

Here, we'll begin by appealing to the concept of the "marginal use". Think of it this way: if you have one unit of a good (say, a cup of flour), there are a number of things you can do with that unit (bake cookies, a cake, powder your hair, give it to a neighbor, and so on) - but you must choose one. If you have a number of units of a good, then there are a number of things you can do with those units - but you still must choose a limited number, as long as you only have a limited number of units.

Now, we can ask the question: how do you value the good? Economists claim that you value a good by its "marginal use".

For example, say that you're stranded on an island, and have 5 units of water. You've decided that the five most important uses (in order of preference)[3] are:

1. Drinking
2. Irrigating
3. Cleaning
4. Bathing
5. Cooling off

How much is one unit of water worth? Sensibly, the value of a unit of water (a means) is derived from what you want to do with it (its end or purpose). But, here the 5 units of water each has a different use - and each use has a different

[3]What I mean: if forced to choose between two of these options, the person would choose the higher ranked one - that is, they "prefer" it.

preference rank! So, the question doesn't immediately seem like it could be answered.

But, consider a bit more deeply. Suppose that a monkey came along and stole one unit of water. What would be lost? At first glance, it might seem that it depends on which unit of water was stolen. If the monkey stole #3, then we'd have to go without cleaning, right? Actually, no. The five units were all identical. If I'm down to four units, then I would sensibly choose to fulfill the four highest ranked uses. So, it doesn't matter which unit was stolen. I'd still choose to drink, irrigate, clean, and bathe. I wouldn't use water for cooling off. If the monkey stole unit #3, I'd simply reassign unit #5 to cleaning, since I'd rather clean than cool off - and I do have the choice to do one or the other without interfering with my other purposes.

So, this suggests that the value of a unit of water is equivalent to the value of cooling off when I have five units of water. If I had four units, the value would be equivalent to the value of bathing, and so on. This leads to an important law: the law of diminishing marginal utility. (Utility here simply means "usefulness".) The more of a good you have, the less useful an additional unit is. The reason is obvious: the first unit you obtain will be given the most important use, the second, the second most important, and so on. So, each additional unit fulfills a less important use than the unit that was obtained before it. This law is the foundation of the law of demand.

The law of marginal utility allows us to make a seemingly silly list. We can list our units of water in order of preference.

1. First unit of water
2. Second unit of water
3. Third unit of water
4. Fourth unit of water
5. Fifth unit of water

I know, this seems silly. Bear with me for now.

Another important fact about preference: more is generally preferred to less.[4] The reason, once again, is pretty obvious. If you have two units of a good, you can fulfill two purposes (or a purpose that requires two units). If you have only one unit of a good, you can fulfill only one purpose. At worst, more can be no worse than less[5], as you can just get rid of any undesired units. This allows us to list preferences for numbers of dollars. So, for example:

1. $5
2. $4

[4]There is an exception to this general rule: if there is a significant cost involved in getting rid of an undesired unit.

[5]Same caveat as above.

3. $3
4. $2
5. $1

What this list means is that, given the choice between having $3 and $4, the person would choose $4. I know, it's shocking. But, we're getting to the good part.

Another reality is that we choose not only between uses for units of a particular good, or the number of a good that we'd like to have, but also between different types of goods. So, we can combine two of our preference lists. For example:

1. $5
2. First unit of water
3. Second unit of water
4. $4
5. Third unit of water
6. $3
7. Fourth unit of water
8. $2
9. Fifth unit of water
10. $1

What does this mean? Given the choice between $5 and the first unit of water, the person would choose $5 (either by selling the water, or by abstaining from buying it). Given the choice between $4 and the first unit of water, the person would choose the first unit of water - and also the second, but not the third. This preference allows us to construct a table that describes how many units of water the person would want to possess if they encountered a market with different prices.

Price	Quantity
$1	5
$2	4
$3	3
$4	2
$5	0

Let's think about where this comes from: If there's a market with a particular price, one way we can think of that is that the person has the opportunity to

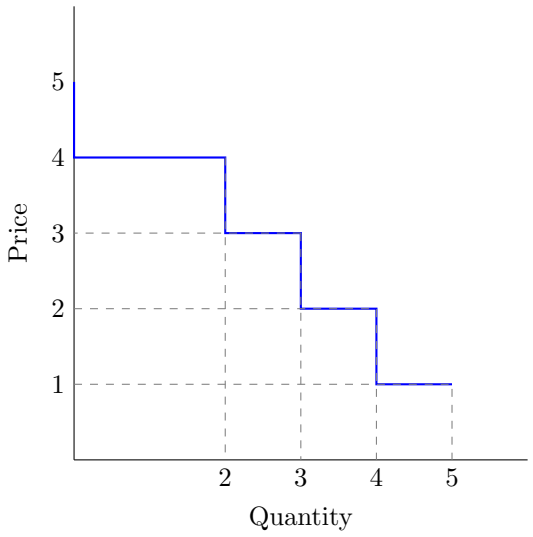

Figure 1: Demand Curve Example

buy or sell as much as they want at that particular price. So, when the price is \$2, they are always choosing between a particular unit of water and \$2. We know that this person would choose the first unit, the second unit, the third unit, and even the fourth unit over \$2. But, they prefer \$2 to the fifth unit. So, they buy 4 units when the price is \$2. We can do the same exercise for the other prices, and arrive at their corresponding quantities.

If we like, we can also make this a graph as in Figure 1. This graph very quickly communicates to us how much is held by the person at each price. If we also possess information about how many units the person had to start with, we can determine how much they buy or sell. For simplicity, we will assume for the moment that they begin with zero units, so that the demand for holding is the same as the demand for purchase. (This assumption will be weakened in a later lesson.)

3 Addition of Individual Demand Curves to Derive Market Demand

The text goes into some good detail about this point, so I won't cover it much here. Chapter 5's section about Individual Demand and Market Demand to see this in action. Just one point I want to emphasize: when we add demand curves for multiple individuals, we need to add quanitities, not prices. Since quantity is on the horizontal axis, we call this "horizontal addition of demand". This is a point that is easily confused, so be careful.

One other point: Typically, when we draw demand curves in class, we will

use straight lines rather than stairsteps. The reason is simple. It's easier to draw straight lines! Also, a straight line is - for most purposes - a reasonable approximation of a stair step function, as long as the stairs are sufficiently small. Typically, when we add different individual demand curves the stair "points" are not all in the same location, so we end up with "small" stairs.

4 Alternative Method and Criticism of the Text

The method for deriving demand described here is somewhat different from that described in the book in Chapters 8 and 9. The reason for that? There are some point on which my view differs from that of much of the profession. This reading describes my view, while the book is somewhat more "mainstream" in its approach. So, let me offer a bit of criticism of the text's approach.

First, the text's view of "utility" is different from that given here. The book uses a "hedonistic" view of utility - where utility is more closely defined as "satisfaction" rather than "usefulness". A somewhat trite objection comes from the fact that utility does not typically mean anything like "satisfaction" in common language. Instead, it is related to "usefulness" (examples: utility belt, utility knife, public utility, etc.). This objection, however, is a bit hollow. Technically, one can define something however one likes. So, this objection strikes the surface more than the substance.

So, let's go a bit deeper. Both the approach described here and that in the book would accept that demand comes from consumers seeking to "maximize utility". However, the meaning of this term is different. In the approach described in this piece, "maximizing utility" means fulfilling the person's most important goals. In the approach described in the book, "maximizing utility" means attaining the highest possible level for a "utility function" that captures "satisfaction". To some degree, these two seem quite similar - just one uses a more "mathy" language to make the point. However, there is a deep difference. A "utility function" - and therefore any preference derived from it - is assumed to be "latent". That is, it's always "there", but you may be unaware of it. This is not true in the action-based view. The action-based view suggests that preferences are "bound up" in action. If you do not choose - either in reality or imagination - between two options, then there is no preference between them. You do not prefer one to the other, and you are not indifferent between them. Put differently, in the utility function view preferences are "revealed" in choice. In the action-based view, preferences are "manifested" in choice. This carries a significant philosophical difference.

Another criticism comes from the "law of parsimony" - also known as Ockham's Razor (or "Occam's Razor", for those who dislike the original spelling). The Razor has a few forms, but they all boil down to a simple idea: a theory shouldn't make unnecessary assumptions. If you can avoid making a particular assumption without significantly changing the theory, then it's better to avoid it.

The fact is that the view of preference described here and the utility function

view described in the book are actually perfectly compatible - if one takes the view of preference presented here as given and makes some additional assumptions. This suggests that the utility function view is less "parsimonious" than the view described here. In fact, it is simply a description of a "special case" inside the view described here. For this reason, a good scientist (and economists want to be scientists!) should prefer the view described in this piece to that described in the textbook.

So, why do most economists adopt the view described in your text? The reason is a practical one. The view described here doesn't make as specific of predictions as the view described in your text. For example, in this piece, the workings of the "income effect" and the "substitution effect" are not easily discerned - but they can be with the utility function view.

This raises a serious scientific question: is it better to make more assumptions so that we can get more specific predictions? Or is it better to make fewer assumptions so that we are more confident in the few predictions we can make? I'm not going to take a side on this one. I'll just note that there is a tradeoff here - and we should be aware of that tradeoff.