

THE THEORY OF ECONOMIC VALUE

by Michael Huemer

1. Basic Assumptions of Economics

People want things, and they tend to act in such a way as to get the things they want, to the best of their ability.¹ Sometimes our wants conflict with each other, so that we are forced to choose between different things that we want. When this happens, we normally choose the thing that we want *more*, over the thing that we want less. Behaving in this way is what we call “rational”; more specifically, it is “instrumentally rational.” *Instrumental rationality* consists in choosing the means that best achieves one’s goals, according to the information one has.

The basic assumption of economics is that people are generally rational in this sense. Thus, economist David Friedman defines economics as “that way of understanding human behavior that starts from the assumption that people have objectives and tend to choose the correct way to achieve them.”² *Economics* studies the nature and consequences of instrumentally rational behavior.

We all rely on this basic assumption when we try to interpret each other’s actions. For instance, if Suzie frequently asks for chocolate ice cream, we infer that she likes chocolate ice cream. Why? Because we assume she is choosing the correct way of getting what she wants. It *could* be that she hates chocolate ice cream, but she’s irrational, so she acts to get the things she hates; but we assume this isn’t the case. Notice that without this sort of assumption, we would have no way of identifying each other’s desires and beliefs.

2. The Law of Diminishing Marginal Utility

Economists (and sometimes philosophers) use the term *utility* to refer to the degree of satisfaction of one’s desires or goals. Utility is assumed to be a quantity: the stronger the desire, the more ‘utility’ one gets when it is satisfied. So if I desire a glass of orange juice twice as much as I desire a glass of apple juice, then we say the utility for me of a glass of orange juice is twice the utility of a glass of apple juice.

¹I am using “want” in a broad sense here, so it covers any sort of goal one is motivated towards.

²David Friedman, *Price Theory: An Intermediate Text* (Southwestern Publishing Co., 1990), chapter 1.

Given this terminology, we can redescribe instrumental rationality as follows: you are instrumentally rational if you choose the action that gives you the greatest utility. (This assumes that you know what the consequences of your available actions would be. If you are uncertain of the consequences, then, if rational, you will weight the various *possible* consequences of an action by your estimates of their *probabilities*. This results in the 'expected utility' of an action, and the standard rule for choice under uncertainty is to choose the action with the greatest "expected utility." However, we don't need to go into how this works here. Here, let's just stick to the simple case where you know the consequences of your actions.)

Most of the things that we want come in different amounts. For instance, I want some chocolate, and there are different amounts of chocolate that I might get. I might get one bar of chocolate, two bars, etc. As a general rule, if I get two bars of chocolate, the *second* bar will be worth less to me than the first one was. That is, after I already have one bar, my desire for another one is diminished. My desire for a *third* bar, after I already have two, will be even less. And so on. In other words, the utility of an additional chocolate bar diminishes as the total amount of chocolate I have increases. In fact, there might even come a point when the utility goes negative--that is, when I would prefer *not* to be given another chocolate bar.

This is an example of *the law of diminishing marginal utility*. The "marginal utility" of chocolate means the utility I get from a small *addition* to my current stock of chocolate. (If you studied calculus, then here is the precise definition: it is the derivative of utility with respect to the quantity of chocolate.) As my total chocolate stash grows, the marginal utility of chocolate (for me) diminishes: that's just a fancy way of saying that the more chocolate I already have, the less desire I have for some more.

What goes for chocolate goes for virtually everything (perhaps everything) else. For example, money also has diminishing marginal utility: to a poor person, \$100 is worth a lot (that is, it will satisfy some strong desires of his); but to Bill Gates, \$100 is worth very little; it wouldn't even be worth his time to stop and pick it up if he saw \$100 lying on the street. The reason is that, if you are rational, you use the first \$100 you get to satisfy your *strongest* desires or needs; after that, you use the next \$100 to satisfy the next strongest desires; and so on.

The law of diminishing marginal utility says that *as the total quantity of a good that you have increases, its marginal utility decreases*. Here is a graph that depicts this situation (fig. 1).

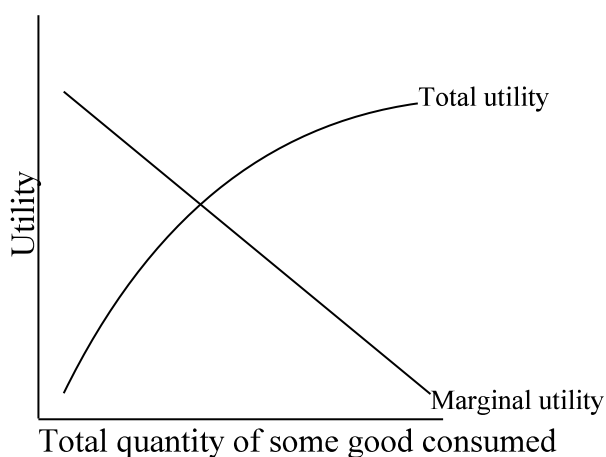


Figure 1: Diminishing marginal utility.

It's important that you understand what this graph depicts, so study it until you do. Notice that the "total utility" (the curved line) increases as you go to the right, because you're generally better off (or rather: your desires are better satisfied) when you have more of a good; but the curve starts to level off at the point where the *marginal* utility line is approaching 0. If you studied calculus, you should recognize a

relationship between the total utility and marginal utility curves: marginal utility is the *rate of increase* of total utility (the derivative of total utility); accordingly, total utility is the integral of marginal utility (so it's equal to the area under the 'marginal utility' line).

3. Demand Curves Slope Downwards

Unfortunately, we often have to sustain some cost in order to get the things that we want. This cost could be in money, or time, effort, etc. If rational, we accept this cost *up to the point* at which the marginal utility of the good is equal to the cost. Return to the chocolate bar example. I find that I have to pay \$1 for each chocolate bar. If I'm rational, I will buy chocolate bars up to the point at which the utility to me of the last chocolate bar equals the utility to me of a dollar. If I continued to buy chocolate *past* that point, then I would be doing something irrational: given the law of diminishing marginal utility, the next chocolate bar I bought would be worth *less* than \$1 to me, so it would be irrational for me to buy it.

Suppose that, since I'm a chocoholic, I am presently buying ten chocolate bars per week. Now, suppose the store raises the price of chocolate to \$3 per bar. Based on the reasoning of the previous paragraph, I will decrease my weekly chocolate consumption; as I do so, the marginal utility of chocolate *increases* (by the law of diminishing marginal utility, applied in reverse). At some point, the marginal utility is once again equal to the price (unless, of course, the price is so high that it's no longer worth it to me to buy any). That will be my new level of chocolate consumption.

To sum that up: a rational person will adjust his consumption of a good to the quantity at which *the marginal utility equals the cost*.

The preceding reasoning leads to another famous principle of economics, which says *demand curves slope downwards*. A 'demand curve' is a curve on a graph that depicts how much of a good a person is willing to buy (how much they 'demand') at various different prices. Look at another graph (fig. 2).

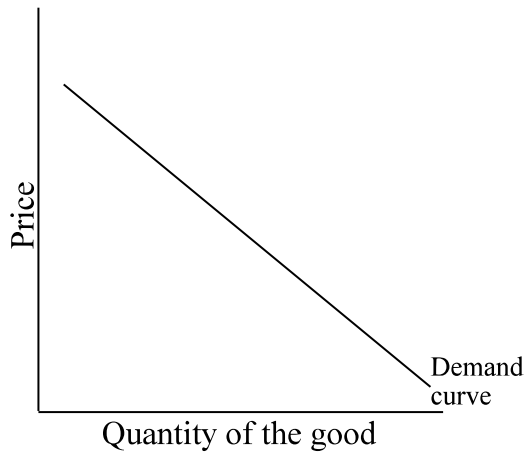


Figure 2: A demand curve.

When the price is high, you're willing to buy a small quantity (hence, the line starts in the upper left part of the graph); when the price is low, you're willing to buy a large quantity (hence, the line ends up in the lower right part of the graph). Again, study this graph to make sure you understand what it depicts. The line sloping downwards on the graph is a "demand curve." Demand curves slope downwards because the more

something costs, the less of it people will buy.

The demand curve looks the same as the marginal utility curve. The reason for this is the principle explained above, according to which *the marginal utility of the good is equal to its price*.³

Lastly, note that the principle "demand curves slope downwards" applies not only to an individual consumer, but also to the society as a whole: that is, as the price of chocolate increases, the total amount consumed by everyone will decrease, just as the amount consumed by me individually decreases.

4. Supply Curves Slope Upwards

³Here is one complication: the 'price' of a good is a quantity of *money*, whereas the *utility* of something is not a quantity of money but a level of *satisfaction* (or something like that). Hence, strictly speaking, they cannot be equal. What I really mean in the text is that you will buy up to the point at which the marginal utility of the good is equal to the marginal utility of the amount of money that is the price of the good. So if oranges are a dollar apiece, you will only buy oranges up to the point at which the utility of an additional orange equals the utility to you of one dollar.

A supply curve is a curve that shows how much of a good a supplier/producer is willing to supply, as a function of the price at which he can sell it. If the price of chocolate goes up, chocolate companies will be willing to make more chocolate. Conversely, if the price of chocolate goes down, less chocolate will be supplied.

Unfortunately, it costs Hershey money to supply us with chocolate. Chocolate has a *marginal cost* (the per-unit cost of producing an additional piece of chocolate). That is why they don't just make an infinite amount of chocolate. Furthermore, the marginal cost of producing chocolate varies with the total quantity one is producing. If one wants to produce just one chocolate bar from scratch, the marginal cost is quite high. However, if one is producing thousands of chocolate bars, the per-unit cost is much lower, since one then uses a factory to make them, which is much more efficient than making them by hand. However, after some point--after the point at which one has reached the capacity of the factory--the marginal cost of producing chocolate starts to *increase* again. To see this, assume that I have a chocolate factory, which is presently turning out bars as fast as it can. Suppose I want to expand my company to make, say, ten times as much chocolate as I am presently producing. Then I need to build more factories. In order to do so, I will probably have to borrow some money, in which case I will then be paying interest on it. The more money I borrow, the higher the interest rate will probably be (because lenders are less willing to lend money to people who are already heavily in debt--they get nervous about that). Furthermore, I will need to find more chocolate-factory workers. In order to make more people want to become chocolate-factory workers than presently want to, I will have to offer higher wages for chocolate work than I am presently offering--I have to lure people away from other jobs. Also, the factory I am presently operating is probably in what I considered the best location for a chocolate factory (that's why I built it there); therefore, the additional chocolate factories will have to be in less-good locations. (The goodness of a location might be a matter of distance to suppliers, availability of labor, tax laws, and various other factors.) Also, as a company gets larger, it starts to have higher administrative costs (it is harder to manage a large business, to keep track of what is going on, and so on). So, for all of these reasons, the cost of producing chocolate is going to increase. Not just the *total* cost (obviously, producing 10,000 bars of chocolate costs more than producing 1,000 bars), but the *marginal* cost will increase. That is, the more I am already producing, the more expensive it will be for me to increase my production.

This principle is the mirror image of the law of diminishing marginal utility. The principle is that *as the total quantity of a good produced increases, the marginal cost of production increases*. Now, at some point, the marginal cost of producing chocolate will

be equal to the price of chocolate. At that point, the producer stops producing, because if he produced any more, the cost of producing the next unit would be greater than the price he could sell it for. Thus, the producer produces the quantity of a good at which *the marginal cost of production is equal to the price*. If he produces more than that, he loses money on the excess units. If he produces less than that, he forgoes the opportunity to make more money.

The reasoning of the last two paragraphs explains why supply curves slope upwards. Here is a graph showing that (fig. 3).

When the price is low, the quantity producers are willing to supply at that price is small; hence, the line starts in the lower left. But at high prices, producers are willing to supply large quantities; hence the upper right part of the graph.

Note that the principle “supply curves slope upwards” applies not only to an individual producer, but also to society as a whole: that is, as the price of chocolate increases, the total amount produced by all manufacturers will increase.

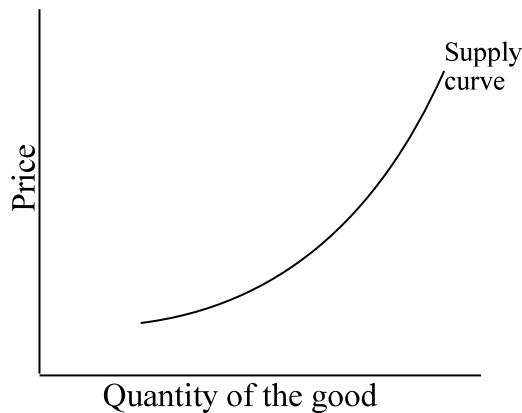


Figure 3: A supply curve.

5. Price Theory, At Last

In a free market, some amount of chocolate is produced, and sold at some price. What determines this price and quantity? Obviously, it has something to do with how much people want chocolate, and it has something to do with how much it costs to produce chocolate. Standard economic theory (*neoclassical economics*, as they call it) gives a precise answer to this. The answer is that *the market price and quantity will be the price-quantity combination where the supply and demand curves intersect*.

Why? The market price will be that price at which the quantity consumers are willing to buy equals the quantity producers are willing to supply. Alternately, we may say that the quantity that will be bought and sold will be that quantity for which the price consumers are willing to pay equals the price suppliers are willing to accept. This is depicted on the graph below (fig. 4).

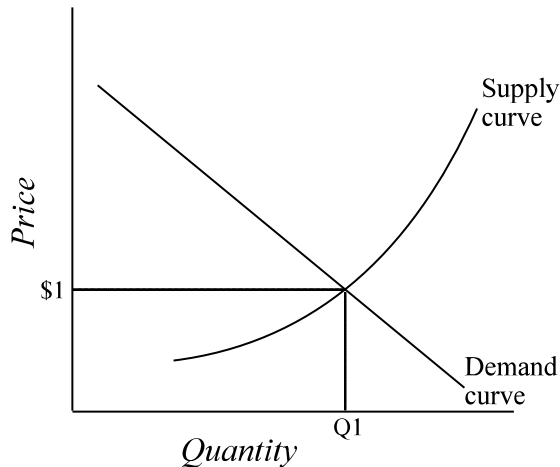


Figure 4: The market price is determined by the intersection of supply and demand curves.

Notice that there is exactly one price-quantity combination (one point on the graph) that satisfies the preceding description. When the price of chocolate is set at \$1/bar (indicated by the horizontal dotted line on the graph), the amount of chocolate consumers are willing to buy (based on the demand curve) is Q_1 . Also, when the price is \$1, producers are willing to supply quantity Q_1 (look at the supply

curve). If the price is higher than \$1, then producers are willing to supply more and consumers are willing to buy less. If the price is lower than \$1, producers are willing to produce less and consumers are willing to buy more. Only when the price is at \$1 do the consumers and producers 'agree'. And so that is the price at which chocolate will sell. (Of course, I made up the \$1 figure for illustrative purposes--I just assumed that is where the supply and demand curves intersect.)

Why is this the only possible price-quantity combination--why must the consumers and producers 'agree' in this sense? Consider the alternatives. First, suppose that the quantity consumers are willing to buy is *greater* than the quantity producers are willing to supply. That means that there are *shortages*--all the chocolate the chocolate companies are producing is being sold, and there are still hungry chocolate-eaters left over who haven't gotten all they want. In such a situation, some companies would be willing to supply a little more to these chocolate-eaters at a slightly higher price (of course, it would have to be at a higher price, since we have already said that the suppliers have supplied all they were willing to supply at the current price). That is, when there are shortages, producers raise their prices *and* increase their production, until the shortage is supplied.

Second, suppose that the quantity consumers are willing to buy is *less* than the quantity producers are willing to supply. This would mean that there are *surpluses*--the consumers have bought all the chocolate they are willing to buy, and there is still extra chocolate left over. In such a situation, some producers would lower their prices in order to get rid of the excess chocolate on their hands, and then reduce their production so that this doesn't happen again. That is, when there are surpluses, producers lower their

prices and also decrease their production, until the surplus is eliminated.

Thus, we see that the market price and quantity of a good is determined by the intersection of the supply and demand curves.

All of this, naturally, is an approximation. For instance, a producer could miscalculate and accidentally produce more than he could sell, or accidentally set his price either above or below the price where the supply and demand curves intersect. People make mistakes. But such mistakes will tend to be small in magnitude and relatively short-lived (producers who routinely make large mistakes will lose money and eventually lose their businesses).

6. What Can We Do with Price Theory?

The above is a summary of the core of modern economic theory. There are lots of interesting applications of this theory, which we would go into if this were an economics textbook. Among the more interesting things, from the standpoint of social/political theory, that one can do is to use price theory to prove results concerning how various different interventions in normal market operations will affect people's *utility*. One can do this because, remember, demand curves reflect consumers' marginal utilities, while supply curves reflect producers' marginal *disutilities* (costs) of production; and the total utility (disutility) of consumption (production) is given by the area under the marginal utility (cost) curve. It can be proven, for example, that price fixing (when the government sets the price of a good, by law, either above or below the normal market price) decreases people's total utility; that tariffs (taxes the state places on imports) decrease the total utility of people in the country that has the tariffs; and so on. I'm not going to go into these results now, however. (If you want to learn more, see the suggested reading below.) Here, we will just discuss the implications of modern economics for Marx's philosophy.

7. Marx's Theory

Marx embraced the *Labor Theory of Value* (LTV). This theory holds that the price of a good will be proportional to the amount of labor that was necessary to produce the good: if 6 hours of labor went into this shirt, and 3 hours of labor went into this chocolate bar, then the shirt should cost twice as much as the chocolate bar.

Why did some people believe the LTV to begin with? Adam Smith gave the following sort of argument for it. Assume, as above, that it requires 3 hours of labor to make a chocolate bar and 6 hours to make a shirt. Now, assume (i) that the price of a shirt is *less* than twice the price of a chocolate bar. In that case, shirt-makers are getting

a bad deal, so to speak: they could switch to becoming chocolate workers and thereby make more money for the same amount of labor. (I.e., instead of spending 6 hours making a shirt, you could spend 6 hours making 2 chocolate bars, which you could sell for more than the shirt.) Therefore, workers would start moving away from shirt-making into chocolate-making. As they did so, the supply of chocolate would increase, leading the price to decrease. This would go on until the price of a shirt was equal to the price of two chocolate bars. Next, assume (ii) that the price of a shirt is *more* than twice the price of a chocolate bar. Here we have just the reverse of the preceding scenario: this time, chocolate workers are going to move into making shirts, since they could make more money by making one shirt (in 6 hours) than they would by making two chocolate bars (also in 6 hours). Therefore, the only equilibrium is when (iii) the price of a shirt is *equal* to twice the price of a chocolate bar. Smith (often regarded as the founder of the science of economics) gave this argument back in 1776 (a hundred years before Marx), and the theory was accepted at the time Marx was writing.

How important is the LTV to Marx's overall philosophy? The answer is that it is crucial to his critique of capitalism. Central to that critique is his claim that, in a capitalist system, the workers are 'exploited' by the capitalists (businessmen). If one accepts the LTV, then Marx's argument for the theory of exploitation is persuasive. But if one rejects the LTV, then the argument collapses. Why? Well, the exploitation theory is based on the ideas that (i) the capitalist extracts 'surplus value' from the workers, and (ii) the wages of the workers will naturally fall to the bare subsistence level (the minimum needed for the workers to live). 'Surplus value' is defined to be the difference between the price for which the capitalist can sell the goods which have been made by the workers, and the price that the capitalist paid the workers for the labor they did in making the goods. Since the value of the finished product is determined solely by the labor that went into it, any portion of that value that the capitalist keeps must be something that the parasitic capitalist extracted from the workers. Furthermore, given that we accept the labor theory of value in general, we predict that *wages* (which are just the price a capitalist pays his workers for their 'labor power') should be determined by the amount of labor that is required to 'produce' *the workers' labor power* (their capacity to do work). What is that? Well, it is the amount of labor required to produce the minimum necessities of life for the workers. That is: wages will be set at the level where the workers can just barely afford to live and keep working.

8. Criticism of Marx's Theory

We know that Marx's general economic theory is false, because he made a number

of testable predictions which are now known to be false. For instance, after Marx wrote, the middle class did not shrink and disappear as he predicted; nor did the upper class shrink as he predicted; nor do we see wages set, in capitalist countries, anywhere near subsistence level; nor has the rate of profit fallen as he predicted; and nor have capitalist economies collapsed because of their internal 'contradictions' as he predicted. But, on a theoretical level, what is wrong with the LTV and the argument for it that we summarized above? This can be understood in terms of the standard modern theory of value.

First, the argument for LTV assumes that the cost, or disutility, of production is determined solely by the quantity of labor. But what if chocolate workers just enjoy 6 hours of making chocolate more than they enjoy 6 hours of making a shirt? Then they would not necessarily switch to the shirt industry just because the price of a shirt was greater than the price of two chocolate bars. However, this problem can be fixed by simply replacing "quantity of labor" in the theory with "disutility of labor" (the decrease in utility that one experiences as a result of having to work).

The second problem is more serious. The argument for LTV treats cost of production as if it were a constant (e.g., "6 hours' labor"). In reality, as discussed in section 4 above, the cost of producing something is a function of the quantity produced; therefore, it is a *variable* (the same good can have any of many different possible costs of production). If we take account of this fact, then we have to ask *which* cost of production is going to determine the price of a good, and the LTV doesn't tell us this.

A third problem is that LTV assigns no role to the demand for a good (how much people want it). But it is obvious intuitively that this must have something to do with the price for which a good will sell.

Notice how the standard neoclassical theory neatly takes account of these points. First, it relies on marginal *utility* of consumption and *disutility* of production to explain people's behavior. Second, it uses an upward-sloping supply *curve* to represent the variable costs of production. Third, it uses both the demand and the supply curves to explain prices, not just one of them. The neoclassical theory also enables one to prove the law of supply and demand from the theory. Today, virtually everyone in economics embraces the neoclassical theory (though this cannot be said of academics *outside* the field of economics).

9. Why Are Capitalists So Rich?

One last question. We have seen Marx's explanation of the wealth of capitalists (the theory of surplus value, exploitation, etc.). If that theory is false, what is the alternative

explanation, based on the neoclassical theory of prices, for the wealth of capitalists?

First, note that salaries are a price, just as the price of chocolate is a price. They're just the price at which someone's work sells. Also note that this is true no matter what your job is or how much you're being paid--if your wage is the price at which your labor sells, the salary a CEO gets paid is also the price at which *his* labor sells. So we shouldn't give a different explanation for the wages/salaries of rich people from the explanation we give for the wages/salaries of poor people. All wages and salaries, under the neoclassical theory, are determined by the supply and demand curves for the type of labor in question. The shape of the supply curve is determined by the willingness of the people who are able to do the work in question to do it and the number of such people who exist. The shape of the demand curve is determined by the desires of others to get that work done. Thus, the high salaries that successful businessmen take home are to be explained by the concurrence of three factors:

- (i) The number of people able to do their job, i.e., able to successfully manage a business. This number is small in comparison with the number of people who can do blue-collar work, for example.
- (ii) The willingness of people to do this sort of work. Among those who are able to manage businesses, most don't want to, and almost none would choose to if the wages were equal to those of blue-collar work. Your professor, for example, might be able to start and manage a business, but he desires not to do so; he would rather be a professor.
- (iii) The desire of others to have this sort of work done. This is determined by the marginal utility of having the work done, which is very high in the case of businessmen. In other words, the overall economic benefit of having an additional person creating and managing a business is greater than the economic benefit of having an additional blue-collar worker.

"How can this (point (iii)) be?" you might ask. "The businessman isn't doing anything; the workers are doing all the work." Well, the individual worker, working on his own (with no factory, no tools, no business plan, little knowledge of the industry or of business in general) is capable of accomplishing very little. If he were to work on his own and try to sell his finished products to people directly, he would not make very much. (Try it and see.) A typical farmer, for instance, would make just enough to feed his family, if he was lucky. The capitalist greatly increases the value that each worker can produce; and he does this for a large number of workers (all his employees). Thus,

the *marginal increase to production* of one capitalist is much greater than the marginal increase to production of one worker.

In a sense, this is a fancy way of saying: the reason capitalists get paid several times more than workers is because what each capitalist does is *worth* several times more than what each worker does (where 'worth' is determined by supply and demand).

10. Suggested Further Reading

1. An excellent economics textbook, which you can read or download for free:
http://www.daviddfriedman.com/Academic/Price_Theory/Pthy_ToC.html
2. A nice, brief history of economic thought about value:
<http://econserv2.bess.tcd.ie/SER/1996/mfogarty.htm>
3. Brief description and critique of the labor theory of value and defense of a 'subjective' theory of value: <http://www.isil.org/resources/lit/labor-theory-val.html>
4. FAQ about the labor theory of value, by someone sympathetic to it:
<http://csf.colorado.edu/pkt/pktauthors/Vienneau.Robert/LTV-FAQ.html>