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THE EFFECTIVE THEORY OF PRODUCER AND CONSUMER SURPLUS: POSITIVE DEMAND, NEGATIVE SUPPLY

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Abstract

This paper shows that there is extra value for consumers and producers, and together for everyone, without relying on the expectation of prices becoming better. This extra is the amount that is more than what could have been gained otherwise. Instead of waiting for prices to go up, it's better to have a positive attitude and work harder to make production more efficient in order to increase the surplus. This paper also shows how demand and supply can look different than usual.

A R T I C L E I N F O

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1. Introduction:

Consumer’s (producer’s) surplus is a simple idea that even someone who isn't an expert in economics can understand. It refers to the extra benefit or gain that consumers (or producers) receive when they buy or sell a good at a lower or higher price than what they were willing to pay or accept. Critics have argued against this idea, saying that it is only a mathematical puzzle and not very useful in real life. Some even believe it should be removed from economic discussions altogether. One critic pointed out that the surplus can be infinite in certain situations, and that prices should be zero to maximize the benefit for consumers.

Dupuis and Marshall connect these measures with how much extra satisfaction or usefulness someone gets from having or using one more unit of something. But to find the demand curve, we need to keep the prices of other goods the same, while marginal utility is found by keeping the other goods constant. The text means that when you're on a demand curve, you're already getting the most satisfaction you can. Moving from one point on the demand curve to another can either be good or bad. Some supply curves can bend downwards, while some demand curves can bend upwards. Friedman and Savage (1948) showed that the level of usefulness we get from each additional unit may increase at a faster rate. Kramer (1973) and Mueller (1979) have shown that when you make a scale based on how much you prefer things, the resulting numbers are actually meaningful.

Measure can have various forms. When the demand for a product is not low, the consumer's surplus that is calculated can be negative. In simpler terms, without a positive supply curve, producer's surplus doesn't have any significance. Even if people don't want to buy something (or sellers don't want to sell it), the situation can still change if the price is lowered. This is just guessing or thinking about something without any evidence or facts. This is arbitrage, which is not an economic theory, even if it is considered after the fact.

The issue becomes worse when we consider both individual and collective satisfaction for consumers. Marshall (1907/1948) argues that events tend to have equal effects on all social classes. However, it is more common for events that benefit one group of people to also harm another group. In support of Marshall, Hicks (1941) uses the compensation principle, which leads to a debate about considering the well-being of different people (Charles Kennedy, 1963, Ian Malcolm David Little, 1957, Y. K) In 1971, Tibor Sinofsky and in 1941, Amartya Sen wrote a text. In 1963, Ng wrote another text. Hicks' addition makes things more confusing, but if we don't understand the concept of consumer's surplus, welfare economics doesn't mean anything.

This paper will discuss how many previous studies have not understood the original purpose of using this idea. It will make extra money without needing prices to go up. The meaning of the definition will be even more powerful, and there is no need to apologize when using it for other situations. Willing (1976) is a book that was written a long time ago.

2. On its existence

2.1. The rationale

The question that Dupuit asked is actually a problem that presents an opportunity. He wants to make a bridge and convince us that it's a good idea. Here's a simpler version: He believes that if we don't build the bridge now, we will feel sorry about it later on. That is something to think about or consider. Marshall (1907/1948) also talks about the consumer's extra benefit. Now, let's think about this idea from a person's point of view.

If someone buys something for a low price and is able to make a lot of money from it through selling or trading, the extra profit they make is called consumer's surplus. If he doesn't buy the input now, he will miss out on the chance to make money. The revenue is like how much someone is willing to pay for something, while the input cost is the actual amount of money they end up paying. Dupuit and Marshall define this concept as either being completely true or completely false. In 1941, a person named Hicks wrote something.

This chance is easier to understand when looked at from the producer's point of view. When someone makes and sells something, they have to give up other things that they could have done to make money. The cost is the amount of money the producer is okay with getting paid for the product, while the revenue is the actual amount of money he receives. The difference between the cost and the revenue is called the producer's surplus. Clearly, the surplus refers to income that is left over after expenses. Karl Marx also uses these two words in a way that can be swapped with each other.

Both revenue and cost are ideas that represent opportunities, but they are seen in different ways.

Revenue is the amount of money that a buyer gets from selling something, while cost is the amount of money that a seller spends to produce something. The idea of consumer’s or producer’s surplus is based on how they both benefit each other.

Proposition 1

Consumer’s surplus and producer’s surplus are measures of the benefits or gains that consumers and producers obtain from participating in a market transaction. They are similar to profit, which is the amount of money businesses earn after deducting costs.

22 is a way to express a number using decimals or fractions. The equality

These two surplus concepts can be written in the same equation. This equation shows how much profit (π) is made by using Product A to make Product B. It takes into account the demand for Product A (DA), the amount of Product B produced (YB), and the prices of Product A (vA) and Product B (vB).

$$\pi = v_B Y_B - v_A D_A \quad (1)$$

The first part of this equation represents the money you would lose if you don't buy Product A right away. The second term means how much money it will cost if someone makes and sells Product B right away. If equation (1) shows a positive value, it means there is either consumer's or producer's surplus. This means that the bridge should be built immediately. The two surplus concepts are the same and equal to the profit of the operation.

However, just mentioning a profit function doesn't always guarantee actual profit. We need to show when profit can be made.

2.3. The demand and supply schedules

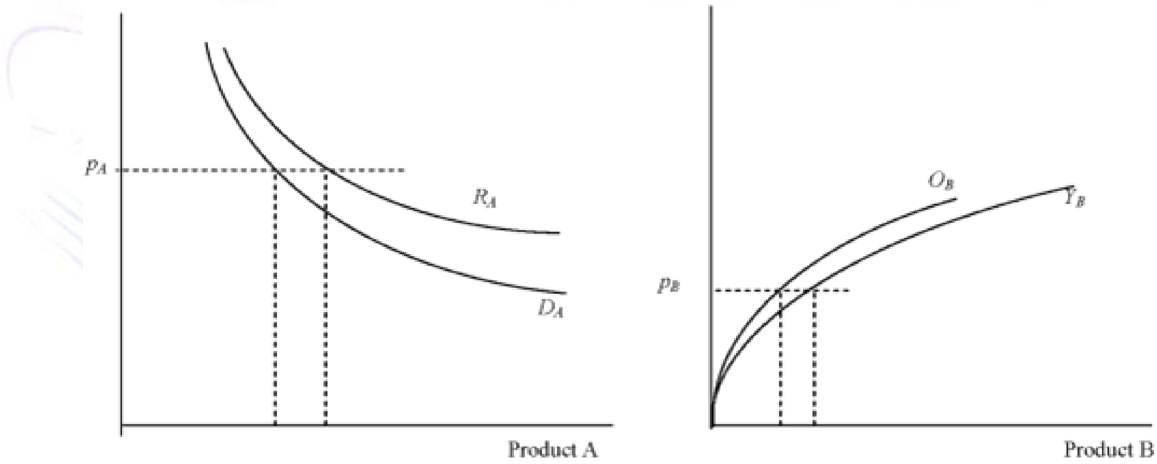
If we think about how things are made according to equation (1),

The equation YB = TBDα represents the relationship between YB (profit) and TB (technology) multipliedby α (input coefficient). By using this equation, we can determine the schedules for demand and supply that maximize profit.

$$D_A^* = \left(\frac{T_B\alpha}{p_A}\right)^{\frac{1}{1-\alpha}}, \quad (2)$$

$$Y_B^* = T_B\,(p_B T_B \alpha)^{\frac{\alpha}{1-\alpha}}, \quad (3)$$

Where pa=va/vb, and pb=1/pa. As long as α<1, the two equations have solutions that make sense, and their connections with the corresponding prices are shown in Figures 1 (a) and 1 (b) respectively. There is no uncertainty about the direction of the two curves: the demand curve goes down, while the supply curve goesup



(a) (b)

FIGURE 1. Figure 1: How to Calculate Consumer and Producer Surplus

2.4. The measure of surpluses

Multiply *pA* to equation (2) to obtain

$$p_A D_A^* = p_B^{\frac{\alpha}{1-\alpha}} (T_B\alpha)^{\frac{1}{1-\alpha}}. \quad (4)$$

It can be demonstrated that adding equation (3) to also produces the same outcome, or,

$$\alpha Y_B^* = p_A D_A^*. \quad (5)$$

This means that only a small part, called α, of the money made from selling Product is used to cover the cost of producing it.

A Rewrite this text using simpler words. We will call this fraction OB, and it is represented in the graph in Part (b) of Figure 1 as a curve on the left side of the supply curve. So, when we talk about Product B, the maximum profit is:

$$\pi^* = Y^*_B - O^*_B = (1-\alpha) Y^*_B, \tag{6}$$

The distance between the two curves at the given price is shown by the horizontal line in Figure 1, Part (b). This is the extra profit for the producer, which shows the difference between the amount they are okay with and the amount they actually get. This measure is easier to calculate than some areas under the usual definition.

Based on equation (1), the demand for Product A is actually a measurement of cost. There is also a measurement of revenue (RA), which is 1/α of the cost according to equation (5). The revenue curve is combined with the demand curve in Part (a) of Figure 1. The space between the two curves at a certain price also shows the profit. In other words,

$$\pi^* = R^*_A - D^*_A = \left(\frac{1-\alpha}{\alpha}\right) D^*_A, \tag{7}$$

This is consumer's surplus: the person pays a smaller layout to obtain a larger revenue.

Since they are measuring the same profit in different denominations, the two parts of Figure 1 are equivalent. Hence, whenever there is consumer's surplus, there must also be producer's surplus, and vice versa. The condition that guarantees their existence is the input coefficient being less than one. Under the classical assumption of "constant returns to scale", there will never be any surplus.

The extension to consumers' or producers' surplus is also definite and unambiguous, for all we have to do is to sum up the profit of all people concerned.

Resolution 2

The term "consumer surplus" or "producer surplus" should be defined as a measure of distance rather than area.

Resolution 3

The total of everyone's profit is the true definition of the terms "consumers' surplus" and "producers' surplus."

2.5. Positive Demand? Negative Supply

Equations (2) and (3) can also be reformulated as

$$D^*_A = \left(p_B T_B \alpha\right)^{\frac{1}{1-\alpha}}, \tag{2'}$$

$$Y^*_B = T_B \left[\frac{\ldots}{p_A} \right]^{\ldots}. \tag{3'}$$

Demand can be good, while supply can be not good. These curves are actually added to Figure 1. This is not new information because economists like Chamberlin (1933) and Robinson (1933) have been using cost curves that show the average or marginal cost, which is related to demand. Even though it rarely happens, a negative supply curve is just a natural continuation. What is important are the prices compared to each other, and they stay the same in both sets of equations.

2.6. The contrast

According to Dupuit, the conventional consumers' surplus measures how valuable a project, like a bridge, is to people. It only looks at the money the project brings in, so it doesn't really show if there is extra. However, it supports the incorrect side. The money earned should come from the space below the line showing the price in Figure 1a, not from above it. The normal way to measure surplus wants prices to be zero for the highest measure, but that could make projects go bankrupt.

The usual ways of measuring assume that people are looking for things that will benefit them, but many people have questioned this idea. People such as Charles Kennedy, Ian Malcolm David Little, and Lionel Robbins have challenged this belief. Instead, our measure is based on the idea that people always seek to make the most money they can.

The cost of public work varies depending on the type of market system. If there are a lot of other businesses, then you can use the prices that are currently being charged in the market to make your analysis. If the operator has a monopoly, they can easily figure out the price or toll that will make them the most profit. Even if there are better ways to collect tolls, like using a fancy device, we should use them to prevent wasting time and causing traffic jams. If the tolls cause traffic, or if the cost to collect the tolls is more than the money they bring in, we should stop collecting them. If we can include the toll in a specific tax, such as the tax on gasoline, we won't need to ask for a separate toll fee.

Some people believe that when building bridges or tunnels, the cost is so high that people using them should help pay for the expense. However, these people may not accurately calculate the actual cost. On the other hand, some people believe that a public good does not cost anything extra to maintain after it is built. That is not true either. Building a bridge can be very expensive, but you only have to pay for the interest on the loan and the decrease in its value each year. If the bridge is taken care of, it may not lose its value quickly or it may even gain value instead. So, the yearly cost of a bridge is the amount of interest plus the amount of depreciation. It is then easy to see if the money collected is enough to pay for those costs and make sure the project can continue successfully. That is an easy bookkeeping job.

3. Favorable Prices are not a Must for Greater Profit

The previous part shows that consumer's or producer's surplus is simply an idea about opportunities. This extra amount is calculated by how much money is made from producing something, and it doesn't need prices to go up to exist.

The picture shows that when the price of something we sell goes up (or when the price of something we buy goes down), we get more extra money, but we can't decide or change those prices.

Instead, there is a better way to make more money. Replace equation (3) with equation (6) to change the second equation.

$$\pi^* = (1-\alpha)T_B\left(p_B T_B \alpha\right)_{1-\alpha} .$$

5 That is how Germany does on her Autobahn.

When α increases, the profit increases by a lot. A bigger α means that the input is more productive, which means it is being used more efficiently to produce things. When a company gets better at what it does, it can make and sell more products. This is shown in the graph as both the demand and supply curves moving outwards. Therefore, with the same prices as before, the company can produce and sell more of its products.

Even though having a higher α reduces the rate of profit, the large increase in output is more important and leads to an increase in profit.

Resolution 4

An activity that is more efficient produces or delivers more surplus for the customer or provider.

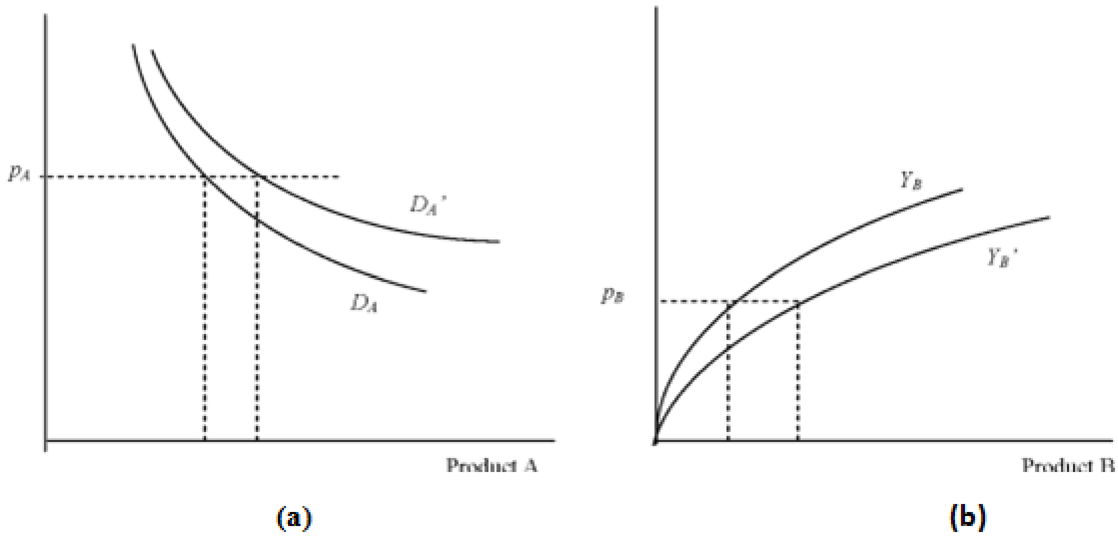


FIGURE 2. Efficiency and Surplus

4. Conclusions

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