



The Principle of Commodity Utility and Its Equations

Jinjun Cheng¹, Dian Cheng²

¹Anhui Grain Engineering Vocational College, Anhui, China

²China Cinda Asset Management Co., Ltd., China

Correspondence

Jinjun Cheng

Anhui Grain Engineering Vocational College,
430 Qianshan N Rd, 430, Shushan District,
Hefei, Anhui, China, 230039

E-mail: cdcacd999@126.com

- Received Date: 08 Sep 2023
- Accepted Date: 15 Sep 2023
- Publication Date: 18 Sep 2023

Keywords

Value, use value, utility, liking degree

Copyright

© 2023 Authors. This is an open-access article distributed under the terms of the Creative Commons Attribution 4.0 International license.

Abstract

"Das Kapital" points out that commodities have two attributes of value and use value at the same time, and describe both qualitatively rather than quantitatively. The utility of commodities fundamentally comes from the functional attributes of natural things, and must rely on the use value of commodities to play its role. People's behavior of buying goods is based on the evaluation of the utility of goods when making the decision to buy goods. The process of evaluating the utility of a commodity when making a decision to buy it is essentially a process of comparing their labor efforts and obtaining happiness in their heart.

The equation of utility is: $U = (1/P) (P_m / W)$; the unit of measurement is named "Om" (symbol in Sanskrit ॐ), is the reciprocal of the monetary unit "Tarrant" (symbol ₹). Commodity utility theory of value and commodity labor theory of value are unified through the utility equation.

Preface

Why do we buy something? Because they meet our needs. Satisfactions come in many forms, and economists have a unified name for these diverse satisfactions: utility. Utility, one of the most important concepts in economics, is people's subjective evaluation of the degree to which the use value of a commodity satisfies people's needs. In Victorian times, philosophers and economists used utility as an indicator of an individual's overall welfare, a mathematical measure of individual happiness. More than 200 years ago, when economics was founded, economists hoped to find a unit, like the degree Celsius used to measure temperature, that could be used to observe and calculate the magnitude of utility, making economics more scientific. Unfortunately, this search has failed, because utility is each person's subjective experience, and human hearts are difficult to measure accurately. In his masterpiece *Capital*, Marx pointed out that commodities have both value and use value, and described them qualitatively rather than quantitatively. Introduction to Commodity Value measurement and connotative value currency published by me in 2020; (DOI: 10.4236/tel.2020.103034), derived an equation for the value of commodities. This paper attempts to deduce the equation of commodity utility according to the most general and universal principle of commodity utility, and make a quantitative evaluation of the size of utility. If the value equation and utility equation of

commodities are proved correct and valid by people's economic activities, economics will have a solid foundation for becoming a true science.

Source of commodity use value

Principle 1: The use value of commodities is fundamentally derived from the functional attributes of natural things.

Everything exists in time and space is precisely because the internal stipulation determines that it becomes something. These internal provisions are the attributes of things, and the external expression of attributes is the function of things. We know that some things in nature have certain functions that can be used to meet the needs of people's survival and development. For human beings, some functions of these things are useful to us. Such as trees show burning, can meet the needs of people to warm; horses show life movement, can meet the needs of people riding; listen to songs can be happy mood.

All the attributes of natural things can be summarized into only three kinds, that is, physical, chemical and life attributes; Accordingly, these properties are externally manifested as physical, chemical and vital functions. Animals, plants, microorganisms and human beings have not only physical and chemical functions, but also vital functions.

Economics usually refers to the functional properties of commodities (goods and services used for exchange) that can meet certain human

Citation: Cheng J, Cheng D. . The Principle of Commodity Utility and Its Equations. Japan J Res. 2023;4(6):1-3.

needs as the use value of commodities. Different commodities, because of their different functional attributes, use value is also different; The same commodity, if it has a variety of functional attributes, has a variety of use values.

It can be seen that the use value of commodities fundamentally comes from the functional attributes of natural things.

Formation of commodity use value

Principle 2: The use-value of any commodity is the result of the union of natural labor and human labor.

The natural formation of things comes from natural labor. Nature forms everything in nature and its functional attributes through the movement of geology, climate and life. Such as mountains, rivers, forests, plants and animals (including us).

Man acquires the things of nature only through human labor. In order to obtain useful things and their functional properties from nature, human beings must output work energy, occupy their own life time, and also need to learn corresponding skills. This process of obtaining natural things is human labor. The things with corresponding functional attributes that man obtains from nature through labor are labor products. A commodity is a product of labor to be exchanged, and it necessarily contains human labor.

It follows that the use-value of any commodity consists of two parts, natural labor and human labor, and these two parts are inseparable. Without human labor, natural things will inevitably remain in their natural state. For example, the salmon swimming freely in the Fraser River in Canada has no use value for us until it is caught. Without natural labor, human labor will lose the object of acquisition, there will be no product of labor, let alone use value.

Formation of commodity value

Principle 3: Nature bestows the fruits of its labor on man without compensation, the products of the combined labor are exclusively possessed and controlled by the human laborer, and the value of the commodity is embodied only in the value of human labor.

The formation of commodities is the formation of the use value of commodities, which is the result of the combination of natural labor and human labor, so it must contain the contribution of the two parts of natural labor and human labor. Because nature gives the results of its labor to human beings for free, the products of joint labor to human workers alone possession and control, so people in the nature to obtain labor products and exchange goods, will only care about and compare their labor, and will not calculate the contribution of nature.

Commodities contain the amount of natural labor and human labor, but because the result of natural labor is a free gift to human beings, then the total value of commodities can only be reflected in the amount of human labor, namely the value of human labor, referred to as value (W).

Equation of commodity value

In Introduction to Commodity Value measurement and connotative value currency published by me, the essence of human labor is described as follows: that is, the process of human labor is a process of physical work such as collecting, transporting, disassembling and combining natural substances.

The essence of labor is a physical process in which human beings consume the energy of the body and occupy the life time to do work to the object of labor. Labor is an activity in which human brain and physical strength cooperate to obtain products. There is no essential difference between mental labor and physical labor, and it is also inseparable. The introduction of the value equation of goods is as follows: $W = \sqrt{ET}$, labor value is the square root of the product of energy E consumed by the laborer and labor time T.

If the commodity is completed by n continuous labor processes, then its labor value can only be calculated separately for the added value of each continuous labor process, and then seek their sum. $W_1 = \sqrt{E_1 T_1}, W_2 = \sqrt{E_2 T_2}, \dots, W_n = \sqrt{E_n T_n}$, The total labor value of producing the commodity is

$$\sum_1^n W = W_1 + W_2 + \dots + W_n$$

The price of the commodity

Price is the actual transaction ratio between the buyers and sellers of a commodity in the market. In real transactions, due to the different supply and demand situations for commodities, the actual transaction price of commodities (represented by the character P) will often deviate from the value and fluctuate around the value, but $P \approx W$ in the long run.

Liking degree: Under the condition of full free competition market, if the buyer within the scope of its ability to pay, willing to pay the highest price for a commodity P_m (P_m is not necessarily the actual price P, but $P_m \geq P$, otherwise the transaction cannot be completed), then the buyer of the commodity preferences degree is: P_m / W , reflects the buyer is willing to pay for the commodity maximum labor price how much times the labor value of the commodity. The larger the P_m / W , the more the buyer likes the product, and the smaller the versa.

Since $P \leq P_m$, P/W can only partially reflect the consumer's preference for the product, and only P_m/W can fully reflect his preference for the product.

The formation of commodity utility

Principle 4: The satisfaction people get from enjoying the use value of goods is the direct cause of utility formation.

The use value of commodities refers to the usefulness of commodities, that is, to meet certain needs of people; The degree of satisfaction that people feel when they consume a commodity is the utility of that commodity. Some goods can satisfy our material needs, such as food, housing, etc., which can be called material utility; There are also some goods, such as listening to concerts, watching circus performances, etc., can make us mentally happy, such utility is called mental utility. But whether it is material utility or spiritual utility, it must rely on the functional attribute of the commodity, that is, the use value, to play its role.

When people consume goods, the perception organs such as eyes, ears, nose, tongue and body interact and integrate with the functional properties of the goods, and people's subjective consciousness evaluates the result of such integration, which is the process of producing the utility of the goods. The satisfaction the consumer gets from enjoying the use-value of the commodity is the basis on which he evaluates the utility of the commodity. The evaluation of commodity utility is people's psychological activity and subjective judgment. Different consumers of the same commodity may get different evaluation.

The same product may be evaluated differently by the same consumer at different times.

The evaluation of the utility of goods is the basis for people to make purchase decisions. For the goods consumed before, people's evaluation of the utility of the goods is mainly based on the past experience and their own situation at that time; People tend to evaluate the utility of goods they have not consumed based on the experience of others and their own circumstances at the time. But fundamentally, the utility of goods comes from the satisfaction of consumers enjoying the use value of the goods. When people make a decision to buy a commodity, they usually judge the utility of the commodity in advance based on their own or other people's experience, and then decide whether to buy it and at what price.

Equation derivation of commodity utility

We will have such experience: just saw a product, we love it and bought it at a high price, but in the later use of it does not like it as in the beginning, feel it is not worth so much money. This psychological process of change is essentially the beginning of the evaluation of the utility of the product, after a period of time to its utility evaluation is reduced. Fundamentally speaking, the size of the utility of the goods comes from the feeling of the consumer enjoying the goods, but in a certain period of time, the feeling of the consumer is not stable, so the utility size of the goods he buys changes in a period of time. So how should we measure the utility of goods?

Only the utility associated with the behavior of buying goods has economic significance, that is, the utility of consumers evaluating when making purchasing decisions has economic significance. To evaluate the size of the utility of a commodity, one is to have an object, that is, relative to who uses it effectively; two, it is to have a time node, that is, the utility of the evaluation when making the commodity purchase decision has economic significance. Therefore, the equation derived to measure the utility size should be based on the time node.

Principle 5: The process of evaluating the utility of a commodity when making a decision to buy a commodity is essentially a process of comparing the amount of labor and the amount of happiness that people get in their hearts.

There is no doubt that labor needs to pay sweat and occupy life time, is a laborious process; Possessing and controlling goods to satisfy one's own needs is a happy process. Therefore, when people make a decision to buy a commodity, they must weigh the degree of his liking for the commodity and the result of the cost of labor before making a decision whether to buy and at what price.

Principle 6: For different goods, if the price P paid by the consumer is the same, the choice of the larger degree of preference P_m/W of the commodity is of great utility to him.

The possession, consumption and control of commodities are human pleasures. Therefore, other things being equal, people will inevitably choose the commodity that brings them greater happiness.

Principle 7: For different goods, if the consumer's preference level P_m/W is the same, the choice of goods with less labor cost P has greater utility for him.

The labor cost paid by consumers when buying commodity P can be regarded as their labor cost, because labor needs to consume their own energy and occupy their life time, and labor is hard. Therefore, under the same other conditions, people will inevitably choose to pay less labor cost commodity.

Comprehensive principles 5, 6 and 7, the equation of commodity utility is derived as follows:

$$U = (1/P) * (P_m/W)$$

Since the Sanskrit word ॐ (pronounced "Om") implies desire, fulfillment, etc., it is more appropriate to use it as a symbol to represent the utility of goods. Hence the unit of U is named Om and the symbol is represented in Sanskrit ॐ. The relation between the unit of utility and the unit of money is: Om = 1/Talant; The symbol indicates: ॐ = 1/₹

Explanation of utility equation

Utility is cause, purchase behavior is result. When consumers buy a commodity, according to the previous experience and the commodity information (including price, value, function, etc.), the commodity utility value U . The size of this U determines whether he buys the product at that time and at what price it buys.

For example, the known value of the commodity is W , the price of the commodity is P , and the consumer is willing to pay the highest price for the commodity P_m . If $P_m < P$, he will give up the purchase, the utility of the commodity is $U=0$ (unit: ॐ); if $P_m \geq P$, he will buy the commodity at the price of P , which in turn suggests that the evaluation of the utility of the commodity when making decisions is: $U = (1/P) (P_m/W)$ (unit: ॐ). It can be seen that the utility U size of the commodity assessed by a consumer when making a purchase decision urges him to act as to whether to buy and at what price. Therefore, utility is the cause, and purchasing behavior is the result.

The unit of measure of utility and the unit of measure of money are reciprocal. The relationship between the two is similar to the principle of human eye imaging, people see the object in the eye image is upside down, and our brain is to analyze and recognize the upside down image. Because the evaluation of the utility of a commodity is the inner activity of a person, and the behavior of buying the commodity is the real activity of the person, the two are interrelated, and the latter is controlled and decided by the former, so it is understandable that the relationship between the two units of measurement is reciprocal.

The utility theory of value and the labor theory of value are unified through the utility equation. The utility theory of value represented by Mengel and the labor theory of value represented by Ricardo have been contradictory and incompatible for a long time. Because U and W are both located in the utility equation, these two theories are unified in the utility equation.

References

1. Menger C. Principles of National Economics. Shanghai: Shanghai People's Publishing House. 1958.
2. Marx K. Das Kapital. Verlag von Otto Meisner. 1867.
3. Cheng J, Cheng D. Commodity Value measurement and connotative value currency. Theoretical Economics Letters. 2020;10(3): 535-544.