

The Effect of Life Cost to Consumer Expenditure Behavior

Huixiong Chen

Business School, Zhejiang University of Finance & Economics, Hangzhou, China

Email: chx@zufe.edu.cn

[Abstract] The traditional consumption function theory is based on various income hypotheses, which ignore the important fact that different consumers have different cost of living. It is a substantial influence on the consumer behavior, such as the marginal propensity to consume and the equilibrium of the consumer. The theory has obvious defects. It is believed that life cost and income marginal equilibrium is the basic rule for human beings' living activities. Money (wage) is the revenue from the expenditure of life cost. And different consumers pay different life cost for same income. Based on this thought, the article brings forward the life cost hypothesis, based on which a new consumption function is established and the consumer equilibrium formula is created. The conclusion of this article is: the crucial factor for consumption is not the income level of the consumer, but is related to the life cost expenditure for gaining a certain income, i.e. the difficulty of gaining income. This finding proves that low wage is the important reason for the low consumption rate of some countries.

[Keywords] life cost hypothesis; Consumer expenditure behavior; Consumer equilibrium; Consumption function

Introduction

It is difficult to use the traditional consumption function theory based on kinds of income hypotheses (absolute income hypothesis, relative income hypothesis, endogenous income hypothesis, permanent income hypothesis and life cycle hypothesis) to explain the economic contrary phenomenon of the low income and low consumption rate of Chinese residents as well as the high income and high consumption rate of American residents. This article breaks through the consumption function theory based on kinds of income hypotheses, establishes the new consumption function, endows the consumer equilibrium theory the new connotation as well as provides new explanation methods to some practical consumer behavior phenomenon through the presentation of the life cost hypothesis.

Life Cost Hypothesis And Consumption Function

Happiness is the ultimate purpose of life. "Looking for happiness and avoiding the pain" is the focal point of social activities. Essentially, all the conscious and rational activities of humans are to pursue the happiness and avoid the pain. However, people need to pay for their happiness in terms of life cost. Life cost is defined as the amount of physical and intellectual labor exerted to earn compensation equivalent to desired happiness. In this article, life cost is mainly the consumer's physical and intellectual work with the time as the dimension for gaining certain monetary income. All activities for gaining happiness of oneself are paid (transferred) by the direct or indirect life cost of oneself or others (between generations). Thus, analyzing from the cost-revenue perspective, there is the marginal equilibrium rule of life cost expense and the revenue between gaining happiness (revenue) and cost expenditure.

The economics expression for this rule is: only when the marginal cost of the life expenditure (e.g. labor, pain) equals to the revenue (e.g. wage, happiness) brought by such cost, can it realize the utility of the life cost expenditure, i.e. the maximum of happiness. In case of the rational agent hypothesis, the behavior selection of the individual consumer should play a role in the marginal equilibrium rule of the life cost expenditure (pain) and the revenue (happiness). Inclusion of the behavior attribute of the consumer in the life cost expenditure and revenue marginal equilibrium is the underlying hypothesis brought forward in this article, "life cost hypothesis" for short. To create a mathematical expression, the consumption expenditure C seems to be the function of income level Y , the basic expression of income hypothesis is:

$$C = f(Y) \quad (1)$$

However, the fact is that the consumer's consumption propensity is not only getting income level constraint, but is also restricted by the difficulty of getting income, i.e. the life cost expenditure for gaining certain income. Because the income only is a monetary form of expressing the life cost expenditure, the consumption function established on the basis of life cost hypothesis should be:

$$C = F(Y, T_L) \quad (2)$$

where T_L represents the life cost paid by the consumer for gaining certain income.

According to the life cost expenditure and revenue marginal equilibrium hypothesis, the more consumer pays for the life cost to gain a certain income, the higher his expectation for the compensation utility of this income for the life cost; on the contrary, the less consumer pays the life cost to gain a certain income, the lower his expectation for the compensation utility of this income for the life cost and the stronger the consumption propensity. So, consumer life cost expenditure T_L for gaining certain income Y affects consumption expenditure C substantively, and then the above formula (2) can be furthered as:

$$\Delta c = \frac{1}{T_L + 1} \Delta y \quad (T_L \geq 0) \quad (3)$$

$$\int dc = \int \frac{1}{T_L + 1} dy \quad (4)$$

Where Δc is the marginal consumption expenditure, Δy is the marginal income, and $\frac{1}{T_L + 1}$ is the marginal consumption propensity. Consumer's marginal consumption expenditure Δc is the product of the marginal income Δy and the reciprocal of the life cost expenditure. When t is approaching 0, the marginal consumption of the consumer will approach the marginal income; to gain the same income, T_L is up, the marginal consumption propensity $\frac{1}{T_L + 1}$ is down, and the marginal consumption expenditure Δc is decrease.

This is to say that people are more likely to spend out the income without life cost expenditure, and it is how beaux is produced; people treasure the income with lots of life cost expenditure and and have a propensity to save it.

Upon further consideration we can divide the consumption into autonomous consumption (necessary consumption) and the induced consumption (the marginal consumption increased because of the increasing of the marginal income). From this perspective the consumption function based on the life cost hypothesis can be furthered as:

$$c = a + \int \frac{1}{T_L + 1} dy \quad (5)$$

Where a is the autonomous consumption, $\frac{1}{T_L + 1} dy$ is the induced consumption

So, the life cost expenditure T_L mainly affects the induced consumption. In the case that the income y is certain, the consumer's consumption expenditure is diminishing as the diminishing of the marginal consumption propensity $\frac{1}{T_L + 1}$ that due to the increased expenditure of the life cost T_L ; and increasing as

the increasing of the marginal consumption propensity that due to the diminished expenditure of the T_L . This is the substantive influence of life cost expenditure and revenue marginal equilibrium hypothesis to the consumption function.

Consumer Equilibrium Based On The Life Cost Hypothesis

According to the traditional consumption function theory, the consumer's income level decides the expenditure level, and then decides the utility level. So there is positive relative relationship between the consumer income level and utility level. The consumer income level increases and diminishes as the increasing and diminishing of the budget constraint line. However, this theory neglects the investigation to a key problem: people's wage income actually is the gain from the life cost. And because of the differences of the region, discrimination, inheritance, physical and mental functions, information, and education different consumers pay different life cost to the same monetary income (or the same consumer pay different life cost for same income in different regions).

Basing on life cost hypothesis, the marginal utility of people's consumption expenditure (transfer to the happiness from the consumable) must equal to the marginal cost of the labor paid (life cost). This is the tenet of consumer equilibrium of the life cost (pain) expenditure and the life revenue (happiness) marginal equilibrium. When people use wages that were gained from the life cost to purchase commodity, the consumer life in unit labor time equals to the commodity consumption that gained in this unit time.

According to the above consumption function theory based on the life cost hypothesis, the consumption behavior of the consumer not only depends on the income level, but also the difficulty of getting the income, i.e. the size of life cost paid for a certain income. Theoretically, income level is the highest restriction of the consumption level of a consumer. Because the income itself is a compensation for the life cost expense, the marginal utility of money used to procure happiness in form of a commodity must equal to the marginal life cost (effort) for getting the money. When people pay high life cost for income, people will spend such money on the important aspects for life, saving the left over income for important future needs such as: bringing up children, marriage, education, etc. Spending the hard earned money lavishly is irrational. When people earn the income easily, the life cost expenditure is little for getting the income, the utility expectation of the consumable compensation seems lower as well.

In this case we can find people purchasing luxury products or items that are not urgently need. Spending money seems more casual. Such relationship can be expressed through the consumption equilibrium formula. We take saving as the future consumable X_2 , the instant consumable is X_1 , the equilibrium condition for consumer choosing money is that marginal utility MU_1 of instant consumption for each unit money equals to the marginal utility MU_2 of future consumption (saving) and equals to the life cost T_L paid for consumable (negative utility). Then:

$$\frac{MU_1}{X_1} = \frac{MU_2}{X_2} = T_L \quad (6)$$

Where T_L is the life cost for getting the instant or future consumable. To the compensation utility of life cost T_L , when people think that the marginal utility of instant consumption of money $\frac{MU_1}{X_1} > \frac{MU_2}{X_2}$, the consumer will add the instant consumption, even the so-called "exaggerated discount" consumption overdraft. When people think that the marginal utility of future consumption of money $\frac{MU_2}{X_2} > \frac{MU_1}{X_1}$ the consumer will add the savings, and even the "super savings". The evidences that consumer does such equilibrium choice between consumption and saving are the compensation utility of life cost T_L ; the consumer equilibrium accords with the life cost expenditure and revenue marginal equilibrium hypothesis.

The above thoughts can also be used to explain the consumer equilibrium of choosing labor or leisure, and be promoted to the maximum utility collocation of the life resource. Suppose the unit leisure time T_1 produces the marginal utility of leisure MU_1 , unit labor time T_2 produces the marginal utility of labor MU_2 , the consumer equilibrium based on the life cost expenditure and revenue marginal equilibrium is:

$$\frac{MU_1}{T_1} = \frac{MU_2}{T_2} = T_L \quad (7)$$

Where T_L is the life cost paid for the leisure consumption or the labor consumable. This formula states that the consumer equilibrium choice is defined such that the marginal utility of leisure time equals to marginal utility of labor time and equals to the marginal expenditure of life cost T_L (negative utility). When the adding utility by the increasing unit labor, time diminishes and cannot compensate the life cost expenditure T_L , the consumer will choose leisure; conversely, he will choose labor. Obviously, this theory can be used to explain more about the problem of resource balanced allocation. Such as the balance of the water used between economic and ecological development under the constraint of water resources. When the both marginal utility of water allocation is equal, that is the optimal collocation solution under the constraint of water resources.

Realistic Consumer Behavior Explanation

According to the life cost expenditure and revenue marginal equilibrium hypothesis, we established a new consumption function, and endowed the new connotation of the life cost theory to the consumer equilibrium formula. Applying the consumption function and consumer equilibrium analysis based on the life cost hypothesis, we can get new explanation for the current consumer behavior (China as a major example).

1) *Why don't Chinese civilians have a trend of low consumption?*

It is well known that Chinese residents have the low consumption rate. The root cause for this phenomenon is that common Chinese workers have low wage and they work very hard. The following table is a wage table for manufacture worker. From this table, we can see the basic information that the real wage level of Chinese manufacture worker is the lowest, and the American is the highest. Such wage level condition illustrate an important.

Table 1

The Real Wage Of Manufacture Worker And The Relative Wage Level: (1998 comparison between China and some other economic body)

Economic body	Real wage	Relative wage
China	1.0	1.0
U.S.A	47.8	1.3
Japan	29.9	1.2
Singapore	23.4	1.3
Mexico	7.8	0.7
Korea	12.9	0.8
Kenya	2.6	2.0
Zimbabwe	2.2	1.2
India	1.5	1.4

Resource: U.N 2002 Trade and Development Report. The real wage and the relative wage of the economic bodies in the table are the ratio comparing with the China's level. The relative wage index is the ratio of the value-added of the manufacture and the absolute wage.

The Chinese workers wage is low and a kind of money earned by arduous labor. In some factories, the wage level is even lower nearing a time equilibrium point for worker using his time to labor or negative canny or even strike. If the economy goes in deficiency, then such distributable transfer income is mainly belong to the state and used to the state public construction, having little effects to the rich and poor gap and the market demand and supply conditions. However, nowadays, the nongovernmental business has developed massively, resulting in a totally different distribution of income, increasing the big gap between rich and poor, and the substantial increasing of the social public order cost.

When people think that the traditional government employments cannot change their fates in an higher living environment, they opt for “voluntary unemployment” and settle for “minimum standard of living ensured sluggards” in cities of China. Such choice may increase the social management cost directly and bring a series of social management problems.

So far, the final consumption rate (the proportion that the final consumption in the expenditure GDP) of China is about 58%, and the international average level is 70%. The resident consumption rate of the other countries is commonly at 61%, and resident consumption rate of China is between 46%-47%. The resident consumption rate of China is 15 percent lower than the average international level. As a developing country, such a low consumption rate is rare in the world. Why? It can be fixed out through table 1 and the consumer equilibrium analysis based on life cost expenditure and revenue marginal equilibrium: the significantly lower resident consumption rate is because of the significantly lower wages. The common laborer's wage is extremely low in China, and the life cost paid for the income is steep. The effective demand that decides the low consumption rate of Chinese resident lies on the difficulty of consumer earning money and is restricted by the rule of life cost expenditure and revenue marginal equilibrium.

The relative prices of lots of the necessary living products, such as house and drug in China are quite high. The most common wage earners are not willing to use wage earned by hard labor to buy things at inflated price points. So, the wage earners in China are likely to save the money, and use it in an emergent case so that the money can realize indeed the utility equilibrium of saving life, rescuing life, being happy and avoiding pain. They consider their savings as an income. It has the negative utility in consumer's psychological scale to use the money earned by hard labor as it would form a “consumer unbalance” and can be understood as pure pain. So, the high saving rate that surpasses the “normal saving rate” is usually the symbol of hard earning, not the symbol of high income.

2) Why do workers and peasants with same income level have different consumption rate?

According to research, since 1980s, the average peasant income level in Zhejiang, Jiangsu and Guangdong provinces have been always higher than the low income resident in towns and cities, while their consumption level of modern consumables, such as color TV, refrigerator, washing machine etc. has been behind (by 10 years) of the low income resident in towns and cities (China Statistic Department 2001). Some of the Chinese economists took this phenomenon as a restriction of coordinated infrastructure of water, power etc. Some other scholars took it as the social factors, such as living style and environment, etc. These are some of the reasons, but not the radical ones. The radical reason is that to gain a same income, the peasant always works more (i.e. the more life cost) than the city worker. The life cost of peasant for gaining same income is much more than a city worker.

There are lots of evidences to prove such viewpoint. Much of the dirty and fatigue work is done by the “peasant worker”, while the citizen prefers to be “unemployment”, which proves that with the same income, the peasant is likely to pay more life cost. Under the same income level, it is the inverse ratio between life cost expenditure and real consumption rate of the consumer. The more life cost paid for the same income, the lower the consumption rate, this is the radical reason of the peasant's low consumption. So, most peasants are not likely to spend the money, then the consumption rate of which is lower than those citizens who have lower income.

3) *Why do the Chinese adults not like to spend money while young people in contrary spend their parents' money?*

The Chinese adults who earn money hard are not likely to spend it, while the young people are comparably likely to spend. Why? It is still the issue that the differences in life cost expenditure and the adults' expectation to the long-term revenue (the maximum happiness, and take the sustained happiness between generations as part of the happiness of theirs) from the life cost expenditure. Lacking of experience of life cost expenditure, the young people spend the money at their own will and know little about the marginal cost of the life expenditure, then the usual situation is that the marginal revenue is less than the marginal cost paid by their parents, which forms the non-rational consumption. Such phenomenon are especially in some rich families, the children don't know the life cost expended by their parents in early years, only see the current family income, so they spend money with little restraint.

All in all, the higher consumption rate in Chinese young people can't represent they come from rich families, it only shows that the young have little of life cost expenditure experience. The infrastructures in some slow developing regions are sometimes more luxury than the developed regions. It surely doesn't represent that those areas have lots of money, only represent the easy coming national debt capital. People related in those areas know little about the marginal life cost of hard earning. It is also used to explain the gambler consumption phenomenon.

Explaining the problem further, due to functions of nerve adaptation and "self-identity principle", some rich adults are inclined to consume conservatively for their memory effects of the hard striving living habits and lots of life cost expenditure for the earning in their young ages. The "pinchfist" sometimes reflects the memory effects of the practical hard earning and consumption in the young ages. Basing on this theory, raising Chinese resident consumption rate to a normal international level depends on transferring the capital to the young ages besides executing the pro-active wage policy. The old generation of Japanese is also very frugal, but the young generation of Japanese is quite wasteful. This tells some common consumption behavior traits of the human beings and its source is the radical function of the life cost hypothesis.

4) *The backside of the frugality is the oppressive life cost expenditure. It is short of persuasion to use especially frugality culture explains the low consumption rate in China.*

Some economists believe that Americans give high light to the self-indulgent culture of *carpe diem*, under which the high consumption rate and low saving rate phenomenon in America appear. Recently, some researches of behavior economists illustrate that American residents generally have the consumption psychology of "exaggerated discount", i.e. form a too strong current consumption preference for overrating the utility of current consumption to the future consumption. While Chinese who affected by the traditional culture have the conservative consumption psychology, which also proved by the high saving rate and low consumption rate phenomenon in those countries that affected by Chinese traditional culture, such as Japan, Singapore, Korea, etc. In fact, the culture explanation is superficial. The ultimate purpose of human beings' activities can be concluded as two words: happiness and pain. Pursing happiness and avoiding pain is the ultimate purposes and life value of human beings' activities, no matter it is an American or it is a Chinese.

The bottom line for American preferring current consumption and forming the "exaggerated discount" phenomenon of high consumption rate and low saving rate is the huge net revenue of happiness existing in overdraft of future consumption under the strong U.S dollars. While Chinese suffer strong net pain to spend money on current consumption, using up the savings under low wage and low Renminbi exchange rate. It seems that the different consumption cultures of two countries affect people's consumption behavior, but actually it is the resource limitation differences behind culture that affect the consumption behavior. The extreme frugal culture only proves being short of resource and the extreme high life cost expended for a certain income. Behind hedonism culture, there is the extreme loose resource restriction (American uses 40% of the world's resource) and extreme low life cost expended for high income. The table 1 is the evidence of it.

Conclusion

All in all, life cost expenditure and revenue marginal equilibrium is the basic rule for human beings' activities. All rational behaviors, like consumption and saving, labor and leisure are in part of the equation. Consumption is always related the demand of pursuing happiness and avoiding pain in human's life. When we consider the life cost differences between different consumers for gaining the same money income, we will realize the shortcomings of the consumption function of the income hypotheses without the life cost expenditure differences. When we endow the life cost hypothesis new connotation of consumer equilibrium and enlarge the investigation to the human life natural meanings (problems of pain and happiness), the consumer behaviors of the labor and leisure, consumption and saving, frugality and luxury and so on has a consensus consumer equilibrium explanation based on life cost hypothesis.

The long-term policy connotations for this research are: improve the common laborers' income level and sense of security to lower their life cost expenditure level. Change the long-term unfair transactional conditions through execution of the "pro-active wage policy" based on technology advancement and improvement of the labor union organizations.

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