

THE NATURE AND SIGNIFICANCE OF CONSUMER THEORY IN MODERN ECONOMICS: THE CASE OF MODERN CHINA

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ABSTRACT

This paper examines the consumer theory both in a traditional setting – in which utility of the consumer is derived from the good itself, and in a new/modern setting – in which utility of the consumer is derived from the characteristics that the good possess. The paper is twofold - the first seeks to arrive at a precise concept about consumer theory and the nature of the generalizations of which it consists. The paper reviews the traditional consumer theory in terms of its weaknesses in modern economics, and discusses the new approach to consumer theory. The methodology used in analysis involved specification of the demand equations; specification of the utility functions; and application of goods differential approach. The application of goods differential approach was used to review the nature and significance of consumer theory in modern economics. The results of the review and analysis showed that characteristics of goods are the main and reasonable factor to utility, to determining the behaviour of the consumer towards decision making in choosing between goods. The traditional approach to consumer theory treats goods as giving direct utility instead of supposing that it is the properties/characteristics that goods possess that give direct utility. Therefore, it can be concluded that the good's characteristic is an important determinant in explaining consumer behaviour.

Keywords: Consumer theory, Modern economics, Utility, Consumer

1.0 INTRODUCTION

The essence of microeconomics theory is to model economic activity from interaction of economic agents trying to pursue economic private interests individually. It is therefore appropriate to argue that most economic analysis begin with individual decision making. Consumer theory involves decision-making process. Microeconomic theory defines decision making as the process in which individuals (agents) choose one good out of two or more alternatives goods.

The issue of choice comes because resources are limited and can be put into alternative use. Thus, an individual takes a decision that will provide the most desired end, say, consumer maximization.

Therefore, the interest of the consumer is to make an optimum decision that promotes her goal. Attempting to reach the most desired goal creates the so called consumer problem. A scientific formulation of consumer problem and finding the optimal solution needs a consumer to have rational methodologies and appropriate tools.

1.1 Background Information

According to Moscati (2003), consumer theory emerged, developed and reached its current standard form over many centuries in the marginalists, from the time it first came in the writings of Menger (1871), Jevons (1871) and Walras (1874) up to the 1971 volume on Preferences, Utility and Demand edited by Chipman et al. (1971) which fine-tuned it in many points. The consumer theory was an autonomous body of doctrine since Marshall's Principles (1890). The study of consumer theory basing on decision making has long been of interest to researchers. According to Richarme (2007), about 300 years back Nicholas Bernoulli, John Von Neumann and Oskar Morgenstern studied the fundamentals of consumer decision making. They maintain that, consumer decision making theories focus on allocation of income by consumers and the way these incomes determine demand of various goods and services.

The traditional consumer theory of demand starts with the examination of the behavior the consumer by assuming that consumers have full information and knowledge of all commodities available, prices and income. According to this theory, in order to attain the objective, the consumer must be able to compare the utility of various baskets of goods, which she can buy with her income at a given price. The traditional theory thus considers the consumer to be 'rational' (Zinkhan, 1992). With this view, economists have believed that people are rational in all the activities and that purchasing decisions are the outcome of economic calculations.

However, other economists (like Kelvin, 1966) claimed that only economic factors considered by the traditional consumer theory alone cannot fully explain the variations in sales and decision of purchase by the consumer, but it is also influenced by many other characteristics of goods as well as psychological and sociological factors. Current studies on consumer behavior regarding decision-making considers many factors and characteristics that influence consumer decision-making, and also, they do allow a wide range of consumption activities beyond purchasing. According to Blackwell et al. (2001), these activities include; need recognition, information search, evaluation of alternatives, the building of purchase intention, the act of purchasing, consumption and finally disposal, if any. This new approach to consumer theory has progressed over a number of distinct stages in the past by adopting new paradigmatic approaches and methods. While the evolution of the theory is still continuous, however, it is in the 1950s when the theory responded to the growth of modern economics to include a wide range of activities that impact consumer decision-making (Blackwell et al., 2001).

2.0 PROBLEM STATEMENT

Kelvin (1966) argues that the traditional theory of consumer behavior as has been explained by Debreu (1959) and Uzawa (1959) gives only a fundamental basis to explain consumer behavior but not enough to explain consumer decision making. Although it has been refined many times since 19th century by utility theorists such as Slutsky, Hicks and others, it has been considered irrelevant in modern economics as it only gives the minimum results due to minimum assumptions that it holds.

The major weakness of this traditional consumer theory is derived from its strong proposition that 'goods are goods'. The theory has omitted all the intrinsic properties of a particular good that makes one good to be different from another good. According to Kelvin (1966), *ceteris paribus*, those properties that makes a diamond quite obviously something different from a loaf

of bread matters most in explaining consumer theory. However, from the point of view of the traditional consumer theory, the rational consumer will be the one who consume only diamond alone or only bread alone, but the one who consumes both bread and diamond is irrational. The traditional theory's predictions are fully based on consumer behavior and not on both consumer behavior and the characteristics of goods. The theory postulates that the way consumers react towards goods should be consistent in certain ways. However, sometimes the theory raises uncertainty on whether the predictions made are in line with consumers being consistent in their choices.

In modern economics where there is high level of technology to change and/or modernize goods, it is believed that knowledge of intrinsic properties of goods is more important in explaining how consumers react towards goods. Recent modern products with many characteristics have led the study on consumer theory be redefined to meet the current standards. Consequently, this paper reviews the traditional consumer theory, its weaknesses in modern economics, and discusses the new approach to consumer theory. There are many ways to do this, including, direct specification of the demand equation; specification of the direct utility function; specification of the indirect utility function; specification of the cost function; and application of goods differential approach.

This paper uses the application of goods differential approach to review the nature and significance of consumer theory in modern economics. It is believed that goods in modern economics do possess different characteristics in different proportions and are sold with either the same or different prices as some existing goods and hence we don't expect that consumers will behave in a consistent way, at least in this case. Therefore, the new approach in this paper takes its departure from the fact that it is the characteristics and properties of goods that utility is derived from and not goods as goods that give utility.

3.0 THE TRADITIONAL APPROACH TO CONSUMER THEORY

Traditional consumer theory assumes that consumers have a well-defined preference over goods. It also assumes that consumers select the most preferred consumption bundle. These assumptions allow making a model that explains how consumers feel about trading off one commodity against another. The model therefore helps to make predictions about consumer behavior. This model is called preference-based model and the general idea behind it is that a consumer has consistent choices.

3.1 Basics of Preference Relations

The preference relations assume that consumers choose among L commodities. The commodity space is given by $X \subset R_+^L$. The basic notion is that, for any two commodities, it can be said that one commodity (x) is "at least as good as" the other (y), denoted by \succeq , for example, $x \succeq y$ means x is at least as good as y (Jehle and Reny, 2011). Using the preference relation, \succeq , many other relations are derived. According to Jehle and Reny (2011), these other preference relations include $y \preceq x$, where \preceq is the "no better than" relation. Also, if $x \succeq y$ and $y \preceq x$ at the same time, it means that the consumer is indifferent between x and y , and it is denoted as $x \sim y$. The final one is the "strictly better than" relation, \succ . In this case, if x is at

least as good as y ($x \succeq y$) and y is not at least as good as x ($y \not\succeq x$), then x is strictly better than y , denoted as $x \succ y$.

The preference relations emphasize on two requirements that every consumer's preference has to obey. These requirements are completeness and transitivity. A relation is complete if given any x and y in X , either $x \succeq y$ or $y \succeq x$. And a relation is transitive only if when $x \succeq y$ and $y \succeq z$ implies $x \succeq z$. These two relations altogether constitute what it means to be rational. That is, a preference relation is rational if and only if it is complete and transitive.

3.2 From Preference to Utility

Utility function describes preferences in mathematical formulas, and this helps to analyze consumer behaviour. A utility function, $U(x)$ assigns numerical figures (numbers) to every consumption bundle $x \in X$. The utility function $U(\cdot)$ represents preference relations \succeq if for any x and y , $U(x) \geq U(y)$ if and only if $x \succeq y$ holds. This means that utility puts a number on x that is at least as larger as the number it puts to y if only x is at least as good as y . In this case, both x and y are goods that directly provide utility to the consumer and therefore they determine consumer behaviors in making decisions and choices among goods.

3.2.1 Utility Maximization Problem

Jehle and Reny (2011) show that the utility maximization problem develops the model where consumers pick the most preferred commodity bundle from the commodity space. The problem of the consumer therefore is to choose a commodity bundle that gives maximum utility. This problem is represented, by Levin and Milgrom (2004), as follows, where p is the price of good x and w represents wealth/total income:

$$\begin{aligned} & \text{Max } U(x) \\ & \text{Such that; } p \cdot x \leq w \\ & x \geq 0 \end{aligned}$$

This problem can be solved using the Lagrangian method to get the optimal solution.

$$L = U(x) + \lambda(w - p \cdot x)$$

This leads to the following Kuhn-Tucker first order conditions:

$$u_i(x^*) - \lambda^* p_i \leq 0 \text{ And } x_i(u_i(x^*) - \lambda^* p_i) = 0 \text{ for } i = 1, L$$

$$w - p \cdot x^* \geq 0 \text{ And } \lambda^*(w - p \cdot x^*) = 0$$

The optimality condition becomes:

$$u_i(x_i^*) - \lambda^* p_i = 0$$

When solving this for λ^* and also solving the same for commodity j we get the following optimal consumption bundle:

$$-\frac{u_i(x_i^*)}{u_j(x_j^*)} = -\frac{p_i}{p_j} \text{ for all } i, j \in \{1, \dots, L\}$$

The right-hand side represents the budget line slope projected into i and j dimensions. This budget line can be written as $x_j = -\frac{p_i}{p_j} x_i + \frac{w}{p_j}$. The left-hand side of the optimal consumption bundle represents slope of utility indifference curve which is referred to as the marginal rate of substitution (MRS). This is the rate at which the consumer is willing to trade good x_j for good x_i while utility is constant. This optimality condition can as well be represented in the figure as shown below (Figure 1), where x^* represents the optimal point and because the level sets are convex then there is only one optimal point:

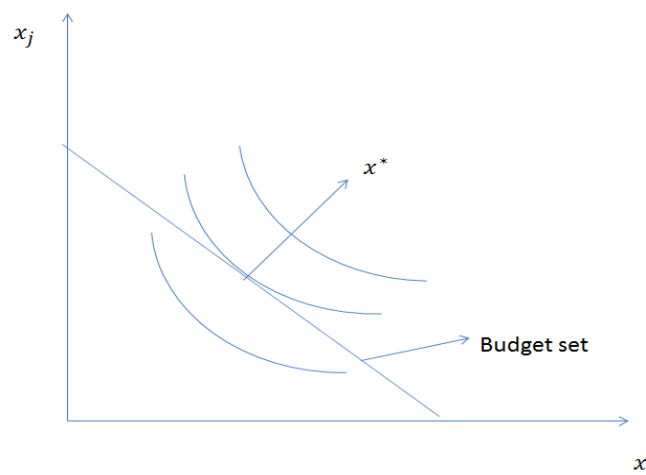


Figure 1: Optimality Condition

3.3 From Utility to Demand Functions

We have found x^* , which is the point that maximizes utility. This point is different for different prices and wealth. Therefore, the variable x^* is a function of prices and wealth, and this function is written as:

$$x(p, w) = [x_1(p, w), x_2(p, w), \dots, x_L(p, w)]$$

This function gives utility maximizing bundle for any value of p and w . It is called the Walrasian consumer demand function and sometimes it is referred to as Marshallian or Ordinary demand function. This function satisfies the following assumptions (Jehle & Reny, 2011):

Walras's Law: that is, x satisfies $p \cdot x(p, w) = w$

Homogeneity of degree zero: that is $x(ap, aw) = x(p, w)$ for all p, w and $a > 0$

Convexity: that is, if preferences are convex, then the optimal region will reflect a convex set.

The idea behind is to see how a rational consumer would make consumption decisions. This is worth because it allows us to make meaningful results that are economically significant to the study of consumer theory. A consumer will normally select goods from a vector of $x = (x_1, \dots, x_l)$ to get a maximum of her utility subject to budget constraint of which she cannot use more than the total wealth, $B(p, w) = \{x \in R_+^l : p \cdot x \leq w\}$. The problem then is to select the element $x \in B(p, w)$ which is considered to be of most preferred and gives the maximum utility. This is the key part of consumer theory and its assumptions need to be well understood.

To choose the element that gives the maximum utility, the following assumptions must hold. The first assumption is that of perfect information. The theory/model considers consumers to be rational but uncertain about some commodities. For example, the consumer is uncertain of how a particular food will taste or how well a cell phone will perform regardless that she is rational. Some goods may be 'experienced goods', which consumers can best learn about by trying (that is, experiencing) the good. In this situation the consumer might want to purchase some goods now and decide later on whether to purchase more or not. This case would require a different formulation. Equally, if it is thought that high price goods are likely to do better, again it would need a different formulation. Secondly, consumers are assumed to be price-takers. That is, price is known, fixed and exogenous.

This assumption ignores many important things like searching for better prices, bargaining for a discount, and good differentiation that led to changes in prices. The third assumption is that, prices are linear. That is, every unit of a particular good, k , comes at the same price, p_k . This assumption has its drawbacks too. For example, quantity discounts are not considered here. The last (fourth) assumption is that goods are divisible. This is represented by $x \in R_+^L$, which means that a consumer can buy good k in any amount she can afford, for example, 3.5 units or π units. However, some many goods don't obey this assumption. For example, buying a car or a cell phone and many other goods of this kind are not in line with this assumption.

4.0 THE NEW APPROACH TO CONSUMER THEORY

In this section we consider characteristics of goods as the main and reasonable factor to utility and finally to determining the behavior of the consumer towards decision making in choosing between goods. The traditional approach to consumer theory treats goods as giving direct utility instead of supposing that it is the properties/characteristics that goods possess that give direct utility. In general, in modern and complex economies like China, a single good in most cases have more than one characteristic so that even the simplest consumption activity by a consumer is being characterized by combined characteristics. For example, a simple meal considered to be a single good has nutritional characteristics, and different meals have different characteristics in relative proportions.

The objective nature to the good's characteristics and/or properties plays the essential part in the analysis of consumer theory. It is therefore appropriate that the new approach to the consumer theory base on this definition of a good so as to accommodate new commodities and quality variation of goods in modern economics.

The new approach to consumer theory can be precisely summarized through the following assumptions; each of these assumptions shows a break to the traditional approach (Kelvin,

1966). A good as a good by itself does not deliver utility to a consumer. Goods have unique characteristics that deliver utility to the consumer. In general, goods have at least many characteristics which are shared by at least many goods. Also, goods as a combination of many goods do possess many different characteristics from those possessed by goods separately.

4.1 A New Model of Consumer Behavior

The assumptions made above helps to set a model that explain the consumer theory well in a new setting/approach. Taking the normal choice situation that face the consumer in the modern China market and assuming linear budget constraint, the model becomes:

$$\text{Maximize } U(z)$$

$$\text{Subject to } px \leq k$$

$$x = Ay$$

$$z = By$$

$$x, y, z \geq 0$$

$x=Ay$ is a vector of total goods required for a given consumption activity, and x is a single good or a combination of goods while y represents the consumption level. The relationship in x and y is both linear and objective. The coefficient A determines intrinsic properties of goods and context of technological knowledge. z is a vector of characteristics of goods and B is the choice coefficient for the units of z . More generally, A and B are consumption technology. $U(z)$ is a normal utility function, however, here it is represented as a function of the characteristics of goods (and not as a function of a good itself). An individual will select a situation that maximizes $U(z)$.

In this model, the collections of characteristics available (the vector z) give direct ingredients to consumer's preferences and welfare. The collection of goods (vector x) represents consumer's relationship with the rest economy and it is not direct and one-to-one as in the traditional model, but indirect through the activity vector y . However, if there are r characteristics, m activities and n goods then it is when $r=m=n$ where there will be one-to-one relationship among x and z and with this situation, we will be able to solve for y in terms of x and therefore $U(z)$ may be written as a direct function of x , $U(x)$. In general, we think that consumers face a choice linking goods collections with characteristics collections.

4.2 Simplified New Consumer Theory

The question asked in the traditional theory, that, does a particular consumer prefer good collection x_1 or good collection x_2 , no longer has a direct answer here. Although the question, does a particular consumer prefer characteristics collection z_1 or characteristics collection z_2 , has such an answer. The simplified consumer theory program that shows a one-to-one correspondence between goods and activities that has a single step between goods and characteristics is represented as:

Maximize $U(z)$

Subject to $px \leq k$

With $z = Bx$

$x, z \geq 0$

The model has four parts. The maxim and $U(z)$ basing on characteristics and it is defined on characteristics-space. The budget line constraint $px = k$ defined on goods-space. The equation system $z = Bx$ shows transformation between the characteristics-space and the goods-space. Finally, is the non-negativity constraint $x, z \geq 0$ for economic meaning?

In the traditional approach, both budget constraint and utility function are defined on goods-space, to do this with a simplified new approach case, we have two options – either we transform the utility function into goods-space and put it in the budget constraint or we transform the budget constraint into characteristics-space and put it in the utility function. Notice how specialized is the traditional approach case to the new approach general model. The $z = Bx$ represents the most important part of the new approach with B playing the major role. Therefore, in this new approach to consumer theory it can be observed that the consumption technology (A and/or B) is an important determinant in explaining consumer behavior. It shows the relationship between the good's characteristics and the good itself on which the analysis of consumer theory in modern economics should depend on.

5.0 CONCLUSION

Certainly, the most challenging issue with traditional consumer theory is to introduce new/modern commodities and how to define these commodities such that they can fit in the theory. The traditional consumer theory seems to be rigid in this case. In modern economies like that of China and over new generations, many new commodities occur every time possessing different characteristics and hence consumers are being disturbed regarding their decision-making behavior over goods. In a complex modern economy with many activities and goods as well as characteristics, it is obvious that taxonomy among goods could be carried out almost without limit. Although taxonomy may not be very useful, discussion of a few selected types of relationships between goods can be of use.

The impact of modern goods to consumer decision making and choice behavior is obvious. For example, if a new good possesses characteristics in the same proportions as some existing (old) goods it may simply fail to sell to anyone if its price is too high or it will completely replace the old goods if its price is sufficiently low depending on either the consumer or the type of the good. Usually, we expect a new good to possess characteristics in somewhat different proportions to existing goods. Think for example of mobile phones that hit the Chinese economy almost every day! Modern mobile phones (smart phones) enter the market with sometimes price being high as compared to existing ones. In this case, we would expect many of them to be dominated by some combination of existing goods and fail to sell, but in most cases, it is different!

Differentiation of goods, if effective (that is, if the differentiated goods are actually sold) represents a welfare improvement since it enables the consumer more efficiently to reach her preferred combination of characteristics. However, the traditional approach has induced economists to believe that it is some single characteristic of a good that is relevant to consumer decision, for example, automobiles are only for transportation. In this case, commodity variations are considered wicked tricks to attract consumers to buy unwanted trimmings. But just think of the choice between a gray Chevrolet and a red Chevrolet. On ordinary theory, a gray Chevrolet and a red Chevrolet are considered to be the same (for transportation) by just ignoring the relevant factor/characteristics of choice they possess (the color). Or they may be regarded as different goods, in which case there is no a priori presumption that these goods are close substitutes.

Among the important features of the new consumer approach model is the discussion of the relationships between goods as revealed in the technology structure. But in the traditional approach, there are no relationships between goods as such, only properties of individual's preferences are elaborated. The new consumer approach model set out here is more operational (meaning that, empirical coefficients can be put to the technology). For example, think of household detergent goods. We have a primary objective characteristic, cleaning power, measured in some chosen way. We can test whether other characteristics are necessary to describe the consumer choice situation. In this case, asking individual consumers on the characteristics associated with detergents is much more productive and operational than asking concerning preferences.

In the new approach model this study has extended into traditional consumer theory the activity analysis. The important assumption has been that goods do possess, or give rise to, multiple characteristics and it is these characteristics (not the goods themselves as in the traditional approach case) on which the consumer's preferences are applied. Hence, the new consumer model is much more realistic in explanatory power and predictive power in modern economics as compared to the traditional consumer model. This paper, however, in itself does not end the debate but it has opened a door for further future development and the search to the most refined consumer theory. More empirical studies need to be done to prove the significance of a new consumer theory presented in this paper.

REFERENCES

- Blackwell, R. M. (2001). *Consumer Behavior*. 9th ed. Orlando: Harcourt.
- Chipman, J. S., Hurwicz, L., Richter, M. C., & Sonnenschein, H. F. (1971). *Preference, Utility and Demand*. Harcourt Brace Jovanovich, New York.
- Debreu, G. (1959). Cardinal Utility for even-chance mixtures of pairs of sure prospects. *The Review of Economic Studies*, 26 (3): 174-177.
- Jehle, G. A. & Reny, P. J. (2011). *Advanced Microeconomic Theory*, 3rd ed. Pearson Education Limited, Beijing.
- Jevons, W. S. (1871). *The Theory of Political Economy*. Macmillan & Co. London.

- Kelvin, J. L. (1966). A New Approach to Consumer Theory. *Journal of Political Economy*, Vol. 74, No. 2, pp. 132-157.
- Khanchi, M. S. (2007). *Business Economics: Meaning, Nature, Scope and Significance*.
- Levin, J., & Milgrom, P. (2004). *Consumer Theory*. Stanford University, (pp. 1-33).
<https://web.stanford.edu/~jdlevin/Econ%20202/Consumer%20Theory.pdf>.
- Lionel, R. (1945). *An Essay on the Nature and Significance of Economic Science*, 2nd ed., Revised and Extended. Macmillan and Co. Limited, St. Martin's Street, London.
- Marshall, A. (1890). *Principles of Economics*, First Edition, London: Macmillan and Co.
- Menger, C. (1871). *Principles of Economics*. Braumüller, Germany.
- Moscatti, I. (2003). *History of Neoclassical Consumer Theory: A Neo-Kantian Epistemological Perspective*, *La matematica nella storia dell'economia*. Primo Workshop, Torino.
- Richarme, M. (2007). *Consumer Decision-Making Models, Strategies and Theories*.
- Uzawa, H. (1959). 'Rational Choice and Preference in the Theory of Consumption,' in K. Arrow,
- S. Karlin, and P. Suppes (eds). *Mathematical Methods in the Social Sciences*, 1959, (Stanford: Stanford University Press).
- Walras, L. (1874). *Eléments d'Economie Politique Pure*, Paris, Economica; English translation: 1926/1993, *Elements of Pure Economics*, London, Routledge.
- Zinkhan, G. M. (1992). Human Nature and Models of Consumer Decision Making. *Journal of Advertizing*, 21 (4) II-III.