

3. Consumer Theory

Unit 2 : The Marginal Use Value (MUV) Approach

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I Basic Concepts of Use Value

This approach carries the similar postulates as the ordinal approach. It still emphasizes the postulate that each person is willing and capable of substitution among goods or services, i.e. each person is willing to give up some goods or services for another goods or services.

1 Meaning of Value & Use Value

Value
It is a **relative** concept. The value of a good X is defined as the maximum amount of other goods give up in order to obtain the good X. In terms of money, the willingness to pay by a person reflects the value of this good to this person. The valuation of a person depends on : income, wealth, taste, prices of related goods, education, culture and even customs.

Total Use Value (TUV)

It refers to the maximum amount of other goods a person is willing to give up for a **specific quantity** of a good.

Marginal Use Value (MUV)

The maximum amount of other goods a person is willing to give up in order to obtain an **extra unit** of a good X is termed the marginal use value of a good X of the person.

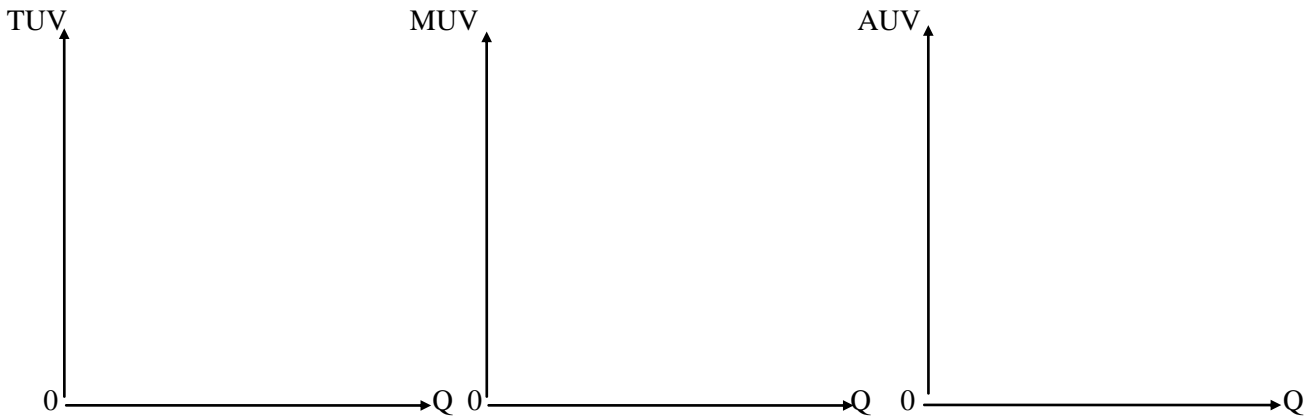
For example, John is willing to give a set of pop CD to his sister in return for a concert ticket from his sister. In economics, the MUV of a concert ticket of John is equal to or given by the set of pop CD.

In a monetary economics, we always express the MUV of a person **in dollar terms**.

* Economists also add in a postulate suggesting that the marginal use value of good to a person is always diminishing which implies that MUV depends on how much goods a person had already had.

An Example

Quantity (Q)	TUV	MUV	AUV = TUV / Q
1	20	20	20
2	38	18	19
3	54	16	18
4	68	14	17
5	80	12	16
6	90	10	15
7	98	8	14
8	104	6	13
9	108	4	12



2 The Paradox of Value : Water-Diamond Paradox

The water-diamond paradox refers to a paradox between the value of water versus that of diamond ; and the price of water versus that of diamond.

Some people argued that water is so useful, yet its price is relatively lower than most goods. Whereas diamond is not *so* useful, yet its price is relatively higher than many goods.

If price could reflect the value of a good, how could economists explain the paradox between water and diamond in this case ?

Are there something wrong with the market or the market forces ? The price mechanism ?

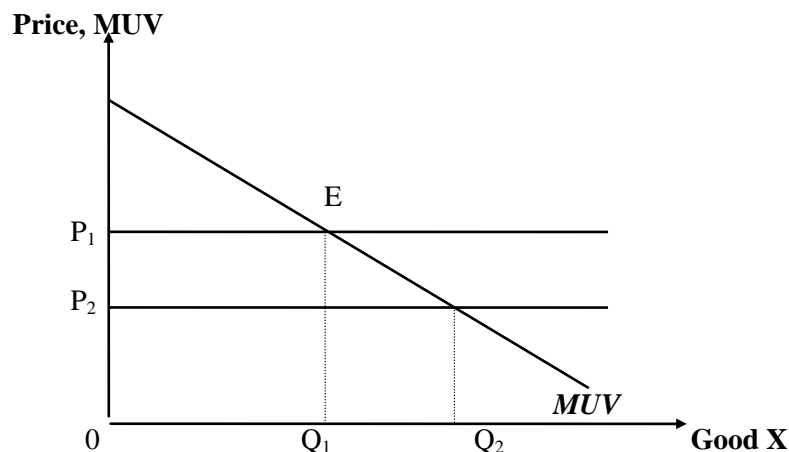
There are mainly three types of explanation suggested by economists in this case.

- (1) Adam Smith distinguished the concept of use value and exchange value to settle the issue. However, the relation between use value and exchange value is still not clear at that time.
- (2) Later, a Neapolitan priest called Galiani Ferdinando (1728-1787) applied the law of diminishing marginal utility to explain it by claiming that the MU of water diminishes sharply relative to that of diamond. As a result, the price of water falls to a relatively low level and vice versa for the case of diamond.
- (3) Recently, economists employed the concept of use value again and MUV to answer. The consumption of water is so large that its MUV diminishes to a very low level . The price of water had to be low to encourage more purchase and consumption of water. Whereas the level of consumption of diamond is relatively low, its MUV diminishes but at a relatively higher level. As a result, its price could be high and its exchange value is high also.

The paradox arises because people confuse the concept of TUV with MUV. The exchange value of a good depends on its **relative scarcity** and **MUV, not its TUV !**

3 The Consumer Equilibrium

The MUV approach involves the derivation of the consumer equilibrium as well as a demand curve. Suppose a consumer has a MUV schedule shown below.



- * Assume initially the market price is given as P_1 for the good X. The consumer will decide what quantity demanded will be based on this price.
- * At a quantity demanded smaller than Q_1 the consumer will find that his MUV is greater than the market price at each level of Q_D ; i.e. his marginal gain (his MUV) is greater than his marginal sacrifice (the price paid per unit). As a rational maximizer, he would continue to buy up to the level Q_1 . The opposite would happen when he buys more than Q_1 with a price of P_1 .
- * Suppose the market price, for some reasons, falls to P_2 now. The optimum situation has changed! Q_2 should be the optimum quantity demanded for him.

* As a result, whenever the market price changes, the level of quantity demanded of the consumer moves **along** his MUV curve.
 The MUV curve in fact tells the relation between the price and quantity demanded as well as the consumer equilibrium. In this respect, the MUV curve becomes the consumer demand curve!
 The diminishing marginal valuation of a good by a consumer also agrees with the usual downward-sloping nature of an ordinary demand curve.

- * The MUV approach is more straight-forward and simple in deriving a demand curve.

II The MUV Curve & Ordinary Demand Curve

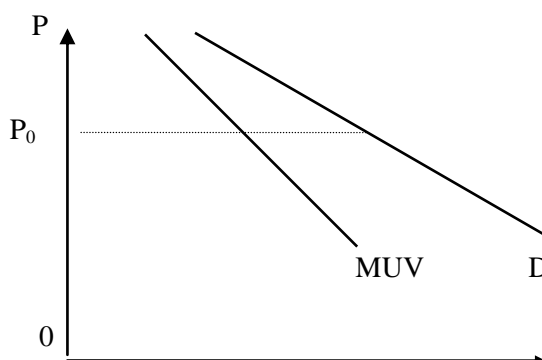
The MUV curve shows the additional use value of an additional unit of good enjoyed by a consumer. The downward-sloping nature of the MUV curve implies that a fall in price will encourage the consumer to buy more. A fall in price also implies a change in real income, *ceteris paribus*.

The MUV curve considers the change in marginal valuation of a consumer **only** when price changes.

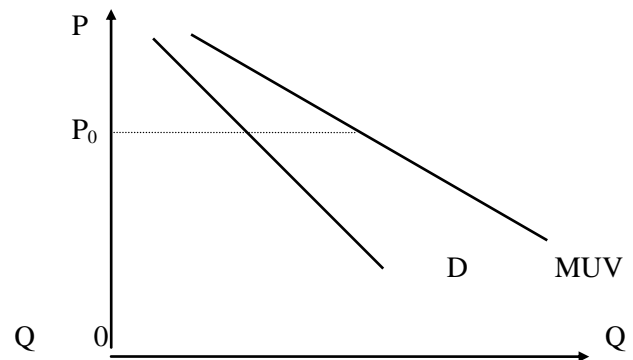
In other words, it is **similar** to the case of a substitution effect in the ordinal approach, although they are based on very different approaches.

- * If the MUV curve involves marginal valuation and no change in real income, then it is **comparable** to the real-income-constant demand curve derived from the ordinal (Hicksian) analysis. As compared with a money-income-constant demand curve, it simply neglects the consideration of the income effect when real income is changing in an ordinary (money-income-constant) demand curve.
- * The MUV curve can tell what an ordinary demand curve tells. In addition, the MUV approach is more simple and straight-forward in giving the state of consumer equilibrium in comparison with the ordinal approach.
- * Remember that a good and useful theory is the one with more explanatory power and simple to understand.
- * However the MUV curve is **not** exactly the same as the ordinary demand curve.

Case 1 : Normal Good



Case 2 : Inferior Good



- * The income effect reinforces the substitution effect in the case of a normal good.
- * The income effect offsets the substitution effect in the case of an inferior good.

- * The MUV approach involves marginal valuation so that the income effect is excluded, i.e. the income effect is zero and the possibility of a Giffen good is ruled out !

III Consumer's Surplus Revisited

Based on the MUV approach, the concept of the consumer's surplus can be further developed with various points of view.

The Traditional View

The consumer's surplus refers to the difference between a consumer's maximum willingness to pay and his actual payment over a certain range of price.

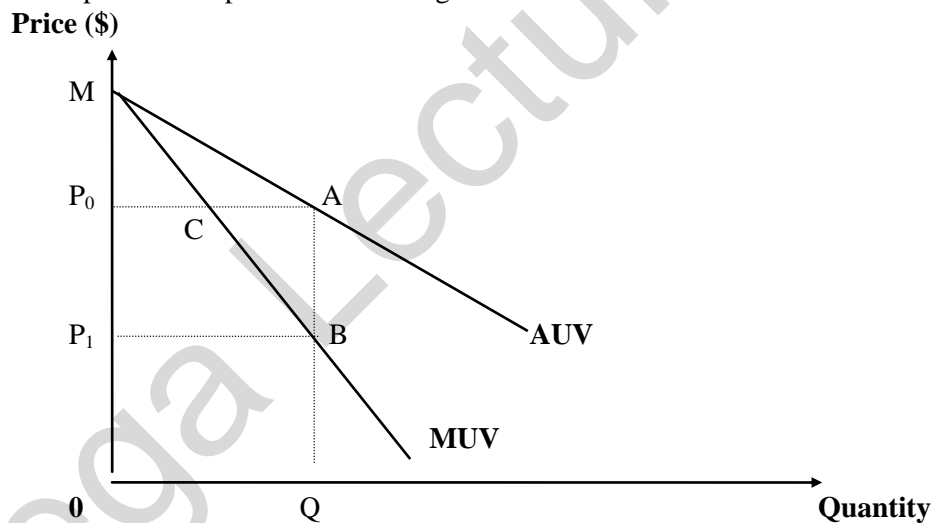
The Use Value Approach

It is similar to the view above with different terminology. The maximum willingness to pay is replaced by the concept of total use value (TUV) and the actual payment is replaced by the total exchange value (TEV) .

$$\text{Consumer's Surplus} = \text{TUV} - \text{TEV}$$

The All-or-nothing Demand Curve Approach

The all-or-nothing pricing requires any consumer to pay an amount in order to take all the units of good. They are not allowed to choose the amount of quantity bought. The supplier aims at extracting the consumer's surplus. The concept can be explained with a diagram.



Suppose the MUV and AUV curves of a consumer are given above. With a given market price of P_1 his TUV of a quantity demanded ($= Q$) is the area under the MUV curve ($= \text{Area OMBQ}$) or equal to the product of P_0 times Q ($= \text{Area OP}_0\text{AQ}$).

In other words, the area mentioned can show his maximum willingness to pay for an amount of Q units of the good.

If the supplier is **able to** charge an AON price to extract the consumer's surplus, the price is still P_0 with an amount of Q bought by the consumer. Otherwise, he could not have any good.

As a result, the consumer would find himself in a situation with : $\text{TEV} = \text{TUV} = \text{Area OP}_0\text{AQ}$

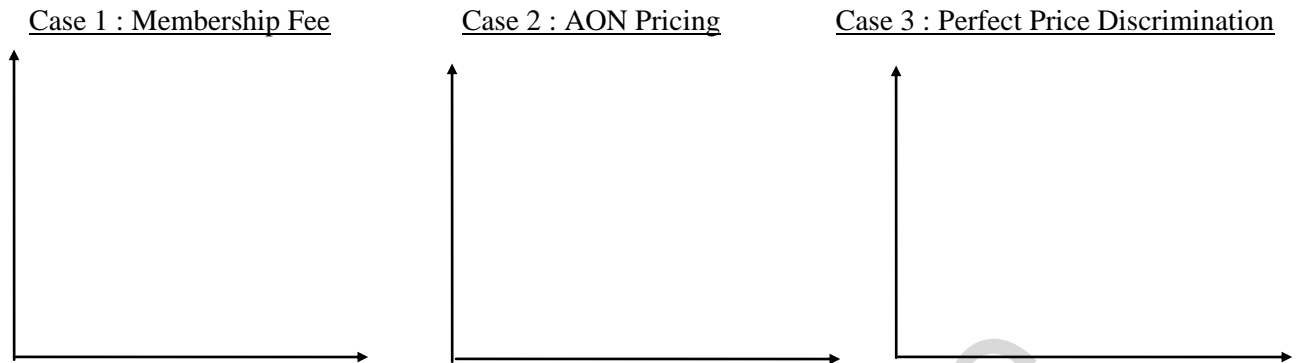
- * In a free market with an uniform market price, a price of P_1 will lead to the consumer to buy Q units, i.e. the maximum willingness to pay at the margin for an amount of Q is only P_1 for the consumer.
- * If a simple uniform pricing is used, the price leading to an amount of Q purchased will be P_1 and the $\text{TEV} = \text{Area OP}_1\text{BQ}$. There is a consumer's surplus of area MBP_1 and is also called the gain from exchange.
- * There is no income effect so that the real income is constant. The AUV curve thus becomes a demand curve under an all-or-nothing pricing arrangement - the so-called " all-or-nothing demand curve " .

The Extraction of Consumer's Surplus

There are many pricing policies employed by the suppliers to extract consumer's surplus. If the suppliers

can use different pricing arrangement, they can eventually receive more revenue than that by simple pricing, based on the assumption that the different pricing arrangement would not lead to significantly high arrangement costs (a type of transaction cost).

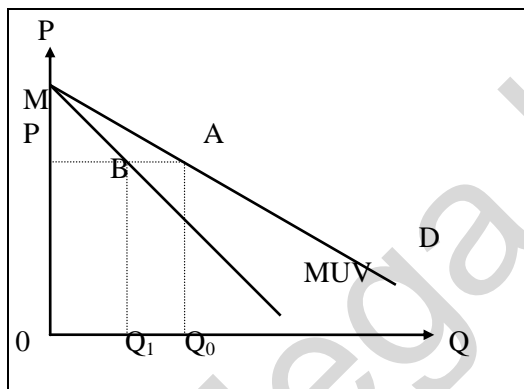
The costs involved in using different pricing will be investigated in the later topics.



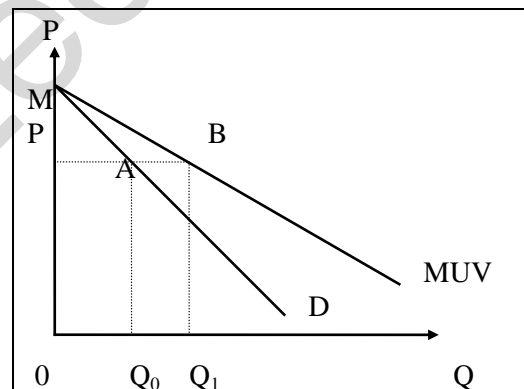
The Measure of Consumer's Surplus By A MUV Curve

The MUV curve is **similar** but not the same as the ordinary (money-income-constant) demand curve. As a result, the consumer's surplus found from these two curves are different.

Case 1 : Normal Good



Case II : Inferior Good



In case of a normal good, the ordinary demand curve **overstates** the amount of consumer's surplus because the income effect has not been excluded in the analysis above.

In case of an inferior good, the ordinary demand curve **understates** the amount of consumer's surplus. The reason is just the opposite of that in case of a normal good.

IV Criticism of The Utility (Ordinal) Theory

1 A General Review of The Ordinal Theory

In the derivation of a demand curve by the ordinal approach, the meaning of these two had to be clearly distinguished :

- holding money income constant with a change in the relative price of any two goods ; &
- holding real income constant with a change in the relative price of any two goods.

It is **essential** to understand that for a money-income-constant demand curve :

- when the price of a good changes, the price effect involved could be decompose into income and substitution effect based on the Hicksian version.
- Giffen good is only a **logical** possibility. It is **inconsistent** with the law of demand. Giffen good exists **only** under the case of constant money income.

- the demand curve derived can be either downward-sloping or upward-sloping in theory. Hence, the demand curve so derived produces **no testable hypothesis** as the demand curve can be downward or upward-sloping.

If the case of Giffen good is ruled out, the downward-sloping (**both** money-income-constant as well as real-income-constant) demand curve can be tested by the reality and provides meaningful explanation of consumer behavior.

People sometimes argue that if we maximize, then the utility-maximizing theory could be formed.

If we **do not** always maximize, will the utility theory be wrong ?

Economists reply by pointing out that so long as the theory can explain and explain well, the validity of the assumptions is **not** important.

People go on to argue that if we always maximize, then “ **whenever we act, we are maximizing utility.** “ This argument becomes a tautology and **could not be tested.**

Economists reply, “ we have to specify the entities on utility and the possible constraints involved so that the implications derived (by the indifference curves and budget lines) can be tested.

The axiom of maximization is adopted because it provides a logical framework with great analytic power - it is easy to build theory and models with the axiom of maximization !

2 The Ordinal Approach & MUV Approach - A Comparison

The ordinal approach cannot compare inter-personal values because the comparison of indifference curves of two or more consumers is not meaningful. The MUV approach provides a common measure (the monetary value) to enable inter-personal comparison.

However, some entities like friendship and love may not be expressed in money terms (?) so that any non-marketable goods pose a problem to the MUV approach but **not** to the ordinal approach which may solve this problem by using the scale of preference.

The ordinal approach can derive a demand curve, but **not** the law of demand due to the logical possibility of the Giffen good.

The MUV approach, by excluding the income effect, can always derive a downward-sloping demand curve. The law of demand can have a scientific ground to support its validity. In this respect, the use value approach is better than the ordinal approach.

Whether a demand curve is downward-sloping or not depends on the **nature** of the good to the consumer. The nature of a good is purely an **empirical** question !

The concept of Giffen good, at best, is only an **ex-post** label to classify some real-life observation. It is never possible to make an **ex-ante** prediction as to which good is going to be a Giffen good, normal or inferior good.

Any good can be a Giffen good whenever the income effect of reducing the quantity demanded outweighs the substitution effect. If conflicting outcomes exist, i.e. income effect may reinforce, offset or outweigh the substitution. It is **not** possible to confirm that the conclusion is a **law**.

On a pure scientific ground, the law of demand is **not** derived (under all possible cases) but it is **asserted** by economists only !

However by denying the existence of Giffen good in reality, we find a downward-sloping demand curve **representative** enough to allow the ordinal theory to be **tested**.

It is exactly with the empirical tests that economists use the principle - the **law** of demand.

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Mega Lecture