
Dr.S.Sampath
Senior Assistant Professor, School of Education
SASTRA University, Thanjavur – 613 401. Tamilnadu, India. 
drssampath@gmail.com

V. Vijay Anand
Assistant Professor, School of Management
SASTRA University, Thanjavur – 613 401. Tamilnadu, India.
vijay@mba.sastra.edu

Abstract:

Disposal of waste becomes a great head ache to the Administrators, Politicians, Industrialists and Environmentalists. It’s all because of lack of planning. If there is a concept in economics to understand the nature of wastage and backed with equated pattern of production and consumption; the wastage can be largely reduced. The producers will get fair price for their produce and consumers will get maximum satisfaction by paying reasonable price for the products constantly. Generally Economic laws reflect the most essential and typical features of the operation and development of a given system of production and consumption patterns. Every economic law expresses the unity of the qualitative as well as quantitative aspect of economic phenomena with price. A new concept has been evolved in order to establish a new law in economics that is ‘The Law of Wastage’ and the same has been presented in this article. This law has been established with the help of necessities of human being and on the basis of consumption patterns of consumers in response to the changes in the price of the commodity. Further the law has been proved with the suitable illustration of hypothetical data and curves. For this purpose three objectives have been framed and tested with the hypothetical data drawn from the vegetable market by observing for a period of six months.

Preamble:

Now-a-days, the concept of waste management becomes more challenging for the administrators, environmentalists, politicians and industrialists. Perhaps, it is more cumbersome to deal with every kind of waste, especially the waste which cannot be recycled and do not fetch any residual value. However, if we look into the nature of waste, the man hour lost and financial constraints attached to it are largely because of lack of planning. Sometimes, the usable products in good quality may not be used for long time and causes either deterioration of quality or not in order of usability because of efflux of time. It may be due to change in fashion, new technology, modernization etc.

The laws of Economic are the necessary, stable and recurrent causal relationships and interdependences of economic phenomena in the course of the production, distribution and exchange of goods and services at various stages of development of human society. Economics laws reflect the most essential and typical features of the operation and development of a given system of production and consumption patterns. Every economics law expresses the relationship between the qualitative and quantitative aspects of economic phenomena with price. The author intends to establish a new conceptual thought in economics that is “The Law of Wastage” and has been illustrated with the necessities of human beings. This law is established based on the consumption patterns of consumers in response to the changes in price of the commodity.
Objectives:

The following objectives are framed in order to test the law of economics with the help of the hypothetical data that has been tabulated after observing a vegetable market and also intended to find the relationship between the prices of the commodity, quality of the commodity with the law of wastage.

i. To establish the Law of Wastage in economics.
ii. To find the relationship between the price of the commodity and the wastage.
iii. To find the relationship between the quality of the commodity and the wastage.

Need and Importance of the Law of Wastage:

The behaviour pattern of both the shop keepers and the consumers changes in response to the price changes for the consumable commodities. Whenever the consumable commodities are sold at higher prices; the shop keepers procure lesser quantities of higher priced commodities and deals very cautiously. Care is taken by the shop keeper while displaying and arranging in the shelf. The salesmen are instructed to handle with care and we cannot find even a bit litter around in the shop. While procuring the commodities shop keepers select the items very carefully to ensure sale of all the procured commodity items without any wastages. Quality consciousness also increases among the vendors while procuring the commodities. Packing and packaging differs for the commodities which are sold at higher prices. If price of the commodity falls; the behaviour of the shop keepers changes and procure large quantities of low priced commodities. We cannot find the exhibiting of commodities in order and can easily notice the commodities littered around every corner. Salesmen too may not receive any instruction with regard to handling because the commodity price is lesser. While procuring larger quantities, perfunctual attention is paid and quality consciousness takes back seat. We can notice the peeling of outer layer and cleaning of the commodities (Vegetables) in different order as compared to the commodities which are procured and sold at higher price.

The behaviour of the customer changes in accordance with the price changes. Higher priced commodities are bought with care by the customers and will have more quality consciousness. They select the best quality one and buy lesser quantities because of higher prices of the commodities. Sometimes, they argue with the shop keepers and salesmen with regard to the selection and quality aspects. Frequently, they bargain at the shop keepers. At the same time the buyers’ behaviour will change when the price of the commodity decreases. They buy larger quantities and the quality consciousness will take back seat. While bringing to home, we can find careless attitude among the buyers. Since, the commodity price is lesser, buyers wouldn’t mind in shelling out money for buying larger quantities. In such circumstances, you can see the shop keepers cheating directly the customers by weighing skin, shells, dust, grass, leafs, etc. Shop keepers wouldn’t allow the customers to choose the quality one while selling at lesser price. If the customers are particular about the choosing of good quality commodities, they have been charged little extra than the usual price of the commodities. All gimmicks are followed by the shop keepers and vendors during the fall of price.

Therefore, it is necessitated to evolve a new conceptual thought in economics ‘The Law of Wastage’. This law has been established by observing the market for a period of six months carefully. The period was chosen between December 2010 and June 2011 to observe the vegetable market by the Researchers because that particular period the entire country witnessed extreme changes in price of necessities. Vegetables which are used mostly by all sections of the society were taken into account to establish this law.

The Law of Wastage:

The Law of Wastage is operated on two important things that are Price and Quality. “When the price of the commodity increases the wastage will tend to diminish; when the price of the same...
Commodity decreases the wastage will tend to increase” (Author). At the same time “When the price of the commodity increases the quality consciousness also increases and no compromise on the quality of the products; when the price of the commodity decreases the quality consciousness also diminishes and there seems to be compromise on the quality of the products”. According to this law, when price of the commodity is higher; the wastage of the same commodity is lower and when price of the commodity is lower; the wastage of the same commodity is higher. When quality of the product is higher; the price of the same product is higher and when quality of the product is lower; the price of the same commodity is lower. The law of wastage operates on the basis of the behaviour of the customers in response to the rise and fall in the price of the commodity.

The law of economics is always operated on the ‘ceteris paribus’ which means “Other things being equal” is a very significant qualifying phrase in this law too. Lower wastage at higher prices and higher wastage at lower prices for a commodity depends on certain static conditions assumed.

Factors influencing the wastage:

i. Over Production:
   Over production of any consumable commodity leads to higher amount of wastage because of market operation, storage, handling, transportation, shipping, distribution, selling etc. Whenever there is a controllable limit of production; the wastage is also being minimized.

ii. Universal consumption:
   The goods which has been consumed by everyone and universally used by all sections of the society will have higher amount of wastage than the goods which are sparingly used or consumed by certain sections of the society.

iii. Number of Consumers:
   The number of consumers for the commodity also determines the amount of wastage. Larger the consumers, the amount of goods sold and distribution at different places will be higher and so is the amount of wastage too.

iv. Number of Middlemen:
   The size of the middlemen channel also determines the amount of wastage. Larger the middlemen channel larger will be the wastage and smaller the middlemen channel the smaller will be the wastage.

v. Income Effect:
   People consume more and more goods when they have more income at their disposal and the wastage of the commodity will be higher. The people never mind in spending money due to increased purchasing power. Whenever the disposal income of the people is less, the spending power will diminish and wastage of the commodity also diminishes. People will be more cautious in spending money on every product.

vi. Substitutes:
   If there are no substitutes for the products, wastage will be higher and the product which has more number of substitutes will have lesser wastage.

vii. Quality Attributes:
   The quality of the commodity also determines the amount of wastage for the product. If the quality of the commodity is enriched the wastage will be obviously lower as compared to the commodity which is of inferior quality.

viii. Seasonal variations:
   The goods which are directly associated with the seasonal aspects will have strong impact on the wastage too. Certain goods are produced throughout the year and certain goods are produced seasonally. The goods which are produced seasonally will have huge wastage during the season and lesser wastage during the off season. Goods which are produced throughout the year will have lesser wastage provided the demand for the product is constant and the production is equated to the demand.

ix. Government Policies:
Policies of the Government will have direct impact on the wastage of the commodity. If the government allows the producers to export the commodity because of over-production the wastage will be higher; if it is the other way round there will be lesser wastage because of restriction on the exports.

x. Transshipments:
   Number of transshipments also has a direct bearing on the wastage of the commodities.

xi. Uses of Commodity:
   If the prices of the commodities are higher, the consumers either go for no-use-principle or uses only for necessity with lesser quantity and the wastage will be obviously lower. When prices of the commodities are lower, the consumers’ behaviour will be different and they use the commodity for various purposes in more quantity with the result the wastage will be obviously higher.

xii. Packing and Packaging Effect:
   The commodity which has been packed in proper wrapper and sent to various places for distribution definitely will have lesser damage as compared to improper or no packing of commodity. For instance, during the season, paddy, wheat, rice and grains are transported from one place to other places for various reasons; may be to the warehouses or transporting to different places or to the distribution points. Observing these activities, we can notice they are mostly transported by trucks and tractors either with poor packing or with no packing. Whenever the trucks and tractors move on the state highways or highways by carrying grains, paddy, wheat, rice etc; we can find the grains littered around on the road everywhere. Like wise on the trucks and tractors also we can accumulate reasonable kilograms of pulses and grains which were transported by them. If these things are taken care and moved with proper packing and packaging wastage can be minimized. Hence, there is a direct impact of packing and packaging on the quantum of wastage.

Behaviours of the Buyers during the period of price rise:

   The behaviour of the buyers changes totally when the commodity has been sold at higher prices. First of all they go for finding alternatives, if alternatives are not available or even nearby the suitable one, they go for buying lesser quantity of the commodity. Most probably, they buy either one-fourth or one-tenth of the usual consumption. The worst affected is middle income and lower income groups. They live with only fixed income and the monthly budgeted provisions and necessities. Here, the author’s observation is depicted as different cases for the understanding of the reality. For instances:

Case – I: During the period of price rise of Onion in the month of December 2010, all the non-vegetarian hotels displayed the board outside their premises that there is no onion omelet which is prepared with the help of an egg, green chilly and an onion. At that time per egg cost was only Re.1.80 (Rupees one and eighty paisa only), chilly cost hardly anything and an onion cost was Rs.10 (Rupees ten only) (average cost per onion piece considered) with as usual other ingredients for making the omelet. The price of one omelet was in a normal situation in a decent hotel ranging from Rs.5/- to Rs.10/-. They could not grace the customers with omelet because the onion cost was higher.

Case – II: In vegetarian hotels they have avoided making Onion chutney for idly and dosa and completely ignored giving salad. They were reluctant to prepare onion dosa and oothappam (Varieties of dishes) because of higher prices of the onion. At hotel, sambars are prepared without the onion which normally prepared (araiithu vita masala crush afresh and mixed with sambar) with dhal, coriander seed, black pepper, red chilly etc dry paste or powder mix.

Case – III: At the social and family gatherings, ceremonies, functions and festivities, people found very difficult to spend on this particular vegetable. Mostly they avoided the dishes which has been prepared with the onion and concentrated on the dishes which would be prepared without the ingredient of onion. Coconuts were used maximum for preparing chutney. Onion chutney was not served during the breakfast and supper time in the functions. Those who arranged marriage and other family functions found very difficult to spend huge amount of money only for onion.

Case – IV: Individual homes cleverly avoided onion by making alternative dishes for all the three meals at home. Instead of onion sambar, they have gone for araiithu vita masala crush afresh and
mixed with (dhal mixer) sambar and in fact most of the family not made at all. Instead they have gone for making sauce (Kuzhambu) which has been made with tamarind, red chilly, coriander mix and dhal combinations frequently. Dishes were made without adding onion or used very little because of higher prices.

**Behaviours of the Buyers during the period of price decline:**

Buyers’ behaviour changes drastically when the price of the same commodity declines. They buy larger quantities that are more than their usual requirements and uses without any hesitation for all the dishes. We can find the buyers handling of the commodity with utmost carelessness. The quality consciousness also takes back seat because of lower price of the commodity as compared to higher priced earlier. They breathe comfortably while purchasing such commodities. At storage room and kitchen we can find the commodities littered around with carelessness.

**Case – I:** At restaurant, use of onion will be in larger quantity and for all the dishes chef uses more than the required quantity. We can find no restriction to the consumers with regard to the onion and they have been graced with sufficient quantity of salad and other dishes whenever needed. Likewise, there is no restriction on any menu preparation and the owner will be in comfortable position to earn earmarked profits. At non-vegetarian hotels, omelet becomes prominent and the consumers enjoy with usual prices. In Vegetarian hotels, chef prepares all the dishes as usual with onion. Onion Sambar and onion chutney becomes prominent during the breakfast and supper, during the lunch time onion sambar is prepared and side dishes gets its charm by adding onion.

**Case – II:** At the social and family gatherings, ceremonies, functions etc people use huge quantities of onion for making variety of dishes. It never pinches the organizer while purchasing huge quantities for the functions.

**Case – III:** Individual family also uses more than the required quantities for their consumption. All the dishes are made with no hesitation. Alternatives for the onion uses will take back seat at the time of lowered prices of the stated commodity. Middle and lower income groups will find no difficulty in spending from the budget during the period of price decline.

We can understand by going through these cases that over usage and consumption leads to quantum of wastage and lesser usage leads to either no wastage or lesser wastage. During the period of price rise, people are very miserly in buying the commodity; during the period of price decline, people are very lenient in buying the commodity. These behaviours will have direct effect on the wastages too.

**The Law of Wastage Schedule and a Curve:**

A statement showing how much of a commodity ‘Onion’ is sold in a particular market at different prices during the period of six months is given under. It is one of the author’s contributions to the technique of wastage theory. A wastage schedule may be an individual schedule or a market schedule. The former tells us the quantities of wastage at different prices by an individual and the latter tells us quantities of wastage in aggregate at different prices in the particular market. For the illustrative purpose, market wastage has been considered. In Tamil Nadu a ‘C’ class city market has been observed between the months of December 2010 and June 2011.
Wastage Schedule
(Onion)

<table>
<thead>
<tr>
<th>Sl.No.</th>
<th>Price Per Kg.</th>
<th>Quantity sold in the Market (in Kgs.)</th>
<th>Quantity of wastage (in Kgs.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>80.00</td>
<td>1000</td>
<td>10</td>
</tr>
<tr>
<td>2.</td>
<td>60.00</td>
<td>1300</td>
<td>15</td>
</tr>
<tr>
<td>3.</td>
<td>40.00</td>
<td>1800</td>
<td>20</td>
</tr>
<tr>
<td>4.</td>
<td>25.00</td>
<td>2000</td>
<td>25</td>
</tr>
<tr>
<td>5.</td>
<td>15.00</td>
<td>2500</td>
<td>40</td>
</tr>
<tr>
<td>6.</td>
<td>10.00</td>
<td>2800</td>
<td>60</td>
</tr>
<tr>
<td>7.</td>
<td>05.00</td>
<td>3000</td>
<td>100</td>
</tr>
</tbody>
</table>

In a hypothetical illustration, a vegetable market’s wastage at different price level is shown in the above table. At Rs.80/- per kilogram of Onion, the market wastage is only 10 kilograms and at Rs.5/- per kilogram the market wastage increases to 100 kilograms. Further, it has been noticed that the amount of Onion sold in the market at Rs.80/- per kilogram is only 1000 kilograms while the price of the onion decreases to Rs.5/- per kilogram; the quantity sold in the market was 3000 kilogram.

From the above table, it is evident that when the price of the Onion was higher the quantity of onion wastage was only 10 kilograms and when the price of the Onion was lower the quantity of onion wastage was 100 kilograms. The wastage may be due to lack of quality consciousness by the consumers. When the consumers pay higher prices for the commodity they become more quality conscious and chooses the best one. Likewise the traders too will be more conscious in handling and procuring higher priced Onion as compared to lower priced season.

Figure No:1
Wastage curve with units sold

Figure No:2
Wastage Curve
The above curves depict that when the onion price was at peak; the quantity sold was lesser and when the price starts declining; the quantity sold also increases considerably. Simultaneously the wastage curve starts at opposite direction when the quantity sold was lesser at higher prices; the wastage was lower, the wastage curve rises slowly and reaches to the maximum when the price of the commodity starts declining.

**Establishment of Normal Wastage:**

1. If we analyze the curves of units sold and wastage both intersect at a point which has been named as ‘N’. The point has reached in the market when the price of the onion was Rs.25/- per kilogram and the units sold were 2000 kilograms where both curves intersect. The intersection point suggests that the wastage at this point is considered as normal and beyond certain level the wastage becomes abnormal. A commodity should find a reasonable price in the market without any adequate wastage with fair quantity of commodity sold.
2. Normal wastage at this point is only 1.5% which is quite reasonable and acceptable.
3. Normal wastage will not pinch the traders in any way with this 1.5% of wastage on the goods sold.
4. The individual consumers also won’t mind if the normal wastage is at a minimal level.

**Need for establishing corporate bodies to equate the production and consumption:**

**Case – I:**

In Punjab, it has been witnessed many times an over production of potato and the farmers were left at dismay because of no takers of their produce. In 2002 and 2011, the potato farmers in Punjab threw their produce on the street because they could not get even minimum price. At that time it was sold for Re.0.50 paisa per kilogram at the retail outlets.

**Case – II**

The same condition was witnessed in Tamil Nadu with regard to the production of Tomato and Mango. Recently, in the month of March 2012 the so called shallot onion fetches very lower price because of over production in Tamil Nadu.

The farmers who are producing such type of commodity may not even fetch their spending per hectare.

**Relationship between ‘the law of wastage’ and ‘economic development of a nation’**:
At the end of 2008 the entire world has witnessed the heat of recession and some countries have even gone to the depression. Revival from the depression made the political administrators, financial authorities, heads of organizations etc most worrisome and cumbersome too. Till now it continues and some countries revived and bounced back on the developing trend. These are all because of various reasons but one such and foremost reason behind either recession or depression is due to lack of foreseeing capacity of the administrators and improper planning of necessities. Here, the law of wastage would largely rescue all the countries from the catastrophe when the law has been understood in proper sense and implement it with farsighted approach. As the conceived law says “When the price of the commodity increases the wastage will tend to diminish; when the price of the same commodity decreases the wastage will tend to increase”, which tells us the significance of maintaining stable prices for at least the necessary commodities. If we want to maintain the stable prices for the necessities the supply should be regular as well as the quantities supplied also in accordance with the normal demand. Which means the supply of the commodities must exceed neither more nor less than the demand. We can put it in nutshell, ‘the equated demand and supply’. For this purpose, the planners should work out on yearly basis by taking into account of the availability of resources and possible productions. At any cost, the predetermined and estimated production of the commodities should be attained by the country as per the target to meet out the requirements. The requirements of each and every commodity should be based on that country’s policy as well as the people of that nation’s needs.

The country’s policy may be only for the people of that nation’s consumption with certain precautionary measures of agreeable percentage of reserve for the unforeseen conditions or the country’s policy may be apart from the people of that nation’s consumption to export that particular commodity at a targeted level provided that the particular commodity can possibly be produced with the help of available national resources without affecting the further production capabilities. The country is having freedom to restrict its exports whenever the natural calamities disturb the production of certain commodities, which does not mean the country needs to maintain uniform EXIM policy throughout; the suitable mechanism of export policy may be drawn by taking into account the stock of the situation without disturbing the stable and reasonable price of the commodity in the domestic market.

In order to ensure the smooth supply of essential commodities and to guarantee the regular production; it is imperative to set up national level exclusive ministry for the necessaries and under which a separate department should be created for every commodity by choosing the right persons from the stakeholders of the commodity. These departments would be altogether responsible to the ministry and works independently with proper planning and inevitably implementing as well as executing the works. There should be world wide consensus with regard to how much of what should be kept in storage and the amount of each and every essential commodities to avoid escalating prices of the commodity by en-cashing the opportunity of a country’s either draught conditions or poor production capabilities. The best possibility is to maintain the stock of the essential commodities for at least a couple of years which means even when there is no production for a year due to some natural calamities or man made disturbances to the country, these stocks will take care of that country’s need. Beyond certain level of increasing the storage capacity will tend to cause serious damages to the stored commodities. The over stored commodities more than the strategic requirement will either deteriorate the quality or completely become useless. Therefore, it is inevitable to plan at every stage and constantly watch the conditions of both stored goods and the markets.

**Facilities to be provided by the state for augmenting the economic development:**

The development of a country which comes over night or a day or two will not last long or sustainable for a long term. There is no such precedence that a country has got development over a short period of time. The development of anything needs at least germination period and constant and wholehearted assistance from the constituted body. Here the role of state is the most important to march towards the sustainable development. Following are the palpable functions that every state must seriously undertake in order to attain the sustainable development.
The state should provide all sort of support to the identified potential producers of each and every essential commodity by effective use of the purposeful census that has been taken by the state.

The requirements of the produce should be made available to them by free of cost for the benefit of the entire humanity.

Transportation facilities should be provided to the producers of essential commodities at free of cost both at the time of taking the seeds, plants, fertilizers, pesticide etc to their field and to bringing their produce to the government regulated markets.

The government must ensure that all their produce should be purchased by the government in order to augment the uninterrupted supply to the countrymen.

The government should take necessary steps to procure everything from the producers and they should not be allowed to keep the stock at their disposal for any reason. For their needs too, they have to buy from the market alone. This sort of arrangement will give proper accountability and required processing of the commodities.

The distribution of commodities from storage point to various markets should also be at free of transportation cost and for all these purpose national and state transportation units should be teamed up and used legibly. The cost of the commodity may be fixed uniformly by the state by adding administrative cost into the procured and processed essential commodities. For instance, the well branded as well as graded commodity are sold at the same price through out the country. This approach can be extended to all the essential commodities too.

If the states come forward to ensure all these implementation with coordinated ideal programme on essential commodities, the unnecessary price rise would be avoided completely, black marketing is easily controlled, middlemen profit is completely avoided, uniform price and regular supply of commodities can be ensured, excess produce would be exported at reasonable price and lastly there shouldn’t be any hue and cry from the people with regard to enhancement of Dearness Allowance on the basis of consumer index etc.

Suggestions:

1. After going through the Law of Wastage, the question spark in our mind that if the price of the commodity is higher the wastage is at minimal which means we have to have higher prices for the commodity? Certainly not, the said law is demanding for the proper planning for the production of various necessary commodities at required level of consumption and proper distribution of the same throughout the year irrespective of the seasons. Uniform and reasonable price of the commodity will keep the check on wastage throughout the year.

2. The author strongly recommends that in order to control the wastage we need to have a perfect statistics about the various commodities with regard to the expected level of consumption pattern and possible production.

3. It is necessary to equate both the production and consumption. We should not allow the market to settle down by itself in respect of price of the commodity considering supply and demand in all the cases.

4. We need farsighted approach for the equated production and consumption. Which means by keeping in mind the unforeseen conditions and natural disasters; it is necessary to produce at least 25% more than the requirements.

5. By doing so, over production can be completely avoided.

6. There is an urgent need to set up large number of warehouses where we can store all the perishable commodities for our year long needs.

7. Government must make arrangements for procuring all the produces by the farmers in order to regularize the distribution throughout the country.

8. Transportation for the same can be provided by the competent agencies of the government at reasonable rate or at free of cost in order to keep the essential commodities price at stable.
9. The inflation can be easily controlled by making a separate corporation for all the consumable commodities to ensure regular supply at reasonable price throughout the year.

10. The middlemen huge profits can be controlled easily by making certain arrangements.

11. The proposed corporation should take care of equating the production and consumption.

12. Exports and Imports may be easily taken care of. The country which is having potential to produce certain commodities need not procure from the other country and can be produced by proper planning. At one point, we open our exports and at the same time within few months, we revert back because of lack of planning and farsighted approach.

Conclusion:

The author has established all the three stated objectives with the help of hypothetical data and illustrations. The Law of wastage is inevitable for every country’s sustainable economic growth and to minimize the unnecessary escalation of commodity prices. This unexplored area in economics need to be studied thoroughly to avoid unexpected and unwanted economic slow down in any country. If necessities are taken care by every state, the economic development can be easily ensured with sustainable growth. By setting up of a Separate Corporation for every commodity the permanent headache of inflation can be controlled.

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