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IS MALTHUSIAN THEORY OF POPULATION IS RELEVANT TODAY

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ABSTRACT

The objective of the paper is to examine and to analyze the Malthusian theory of population which was considered as relevant in earlier days. He has examined the relationship that exists between the population and food supply. According to him, there are two types of checks known as positive and preventive check to arrest the population. Unless and otherwise the human being arrest the human population, the nature will have its hand .This paper, therefore focuses on the determinant and consequences of population, death rate, birth rate, occurrence of flood and famine which would affect the population and the world food supply that belongs to 19th century. In order to analyze the relationship that exist between the population and food supply, linear equation y=399.14x+2514.1 was used and the r2 value is 0.9986 .

KEYWORDS: Preventive Checks, Positive Checks, Population, Birth Rate, Death Rate, Agricultural Production, Malthus Theory.

INTRODUCTION

The first systematic treatment of the problem of population in modern times was made by T.R.Malthus. Malthus explained his theory of population in his famous book " An essay on the principles of population" is an attempt to explain an observed fact in all civilized societies. There is a tendency for population to increase at a faster rate than food supply.

THREE POSTULATIONs:

The Malthusian theory of population holds the following three important postulations.

1. Population is constrained by the availability of food grains. If the food is available in abundance, a large population can be supported and viceversa.
2. Population tends to grows in geometrical pattern or arrangement. It increases in the order of 2, 4,8,16,32,64…….. .At this rate it is said that a given population would tend to double itself in every 25 years.
3. Food supply tends to increase only in arithmetical operations. They grow in the order of 1, 2, 3, 4, 5, 6……..

POPULATION OUTSTRIPS FOODSUPPLY:

Thus according to Malthus, population has a propensity to increase at a faster rate than food supply. If it is not checked,population would tend to surpass food supply.To check this trend, people of their own accord, can apply check method.

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PREVENTIVE CHECKS AND POSITIVE CHECKS:

The methods, to reduce population according to Malthus are preventive checks. Preventive checks are knowingly adopted by human beings to reduce birth rate. Preventive checks include late marriages, sexually abstinent and self control in married life. These are the methods which Malthus accepted. If people do not practice the preventive checks mentioned above, nature will apply her correctives i.e, positive checks or vice and misery will begin to operate in the country. Positive checks will result in an increase in the death rate. They are epidemics, wars, famines, diseases etc.

REVIEW OF LITERATURE:

Some of the related literatures are

1. Klaus Hofmann in his article " Beyond the principle of population: Malthus essay" in 3rdApril 2012.He stressed the argument establishing the invalidity of Malthus construct of a principle of population. He propounded that Malthus theory is located beyond the principle of population with the oscillation figure as its centre.

2. Prof.Davidet al in his article decadal growth rate of urban population" in sindhuburg district (Maharashtra)stressed that population growth is the most fundamental demographic attributes growth determines the density distribution pattern and composition of population. Geographical study of urban growth and demographic characteristic is of vital importance for understanding its dynamism as well as for planning at the local and regional level.

STATEMENT OF THE PROBLEM:

The size of population keeps on changing. It increases or decreases on the basis of time and space. An inquiry was made into the economic consequences of population on the world. The population and its size all over the world can have both positive and negative effects on the natural resources, climate, economic growth and income.

Both domestic and global population growth is adding to conflict over water,energy,food,open space and wilderness, transportation, infrastructure and numerous problems in developing countries. Large family size is a major cause of poverty and poor health.

Rapid population growth leads to environmental change. Rapid population growth has expanded. The excess population is itself a symptom of overpopulation. This problem was becoming more and more acute, day by day due to rapidly increasing population by about22 million persons a year. This leads to have a depth analysis on the Malthusian theory. In order to solve the problem in the study, extrapolation was used with the help of linear equations.

OBJECTIVES:

1.To have a clear idea on the Malthusian theory and to find out validity of the theory.

2.To know the relation exist between the food supply and population.

STATISTICAL TOOLS:

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In order to find out the value of the agricultural production for the year 2015-2020 extrapolation method was used to forecast the value for the above said year. Similarly comparison was made between the population and agricultural production to verify whether agricultural production was increasing in arithmetical ratio and population was increasing in geometrical ratio. This comparison was made to check whether the Malthusian theory was relevant today.(note the trend line)

POPULATION RATE:

The population rate is nothing butte world population (ie) is the total number of humans currently having. The global population growth amounts to around 83 million annually, or1.1% per year. The global population has grown from 1800 to7.616 billion in 2018.It is expected to keep growing , and estimate have put the total population at 8.6 billion by mid 2050 and 11.2 billion by 2100. Many nations with rapid population growth have low standard of living.

TABLE: 1 WORLD POPULATION RATE

YEAR	BILLION
1960	3,018
1965	3322
1970	3682
1975	4061
1980	4440
1985	4853
1990	5310
1995	5735
2000	6127
2005	6520
2010	6930
2015	7349
2020	7795

Source: World Population Prospects 2017
(United Nation Population Division)

In 2012 United nation projection shows a continued increase in population with a steady decline in the near future , with a steady decline in population growth rate, the global population is expected to reach between8.3 and 10.9 billion by 2050.The 2019 Revision of the UN estimate gives the " medium variant" population as nearly 8.6 billion in 2030, about 9.7 billion in 2050 and 10.9 billion in 2100.Some analysts have questioned the sustainability of further world population growth ,high lighting the growing pressure on the environment, global food supplies and energy resources.

FOOD SUPPLY:

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Agricultural economics is concerned with food production. It is an applied field of economics concerned with the application of economic theory in optimizing the production and distribution of food. Agricultural economics began as a branch of economics that specifically dealt with land usage. It focused on maximizing the crop yield with the available resources.

TABLE: 2AGRICULTURAL PRODUCTION IN WORLD LEVEL

YEAR	PRODUCTION (MILLION TONNES)
1960	824
1965	905
1970	1079
1975	1237
1980	1429
1985	1647
1990	1769
1995	1707
2000	1846
2005	2017
2010	2213
2015	2020
2020	2230

Source: our world data. In

By2020 the agricultural production for the world was 2230 million tones. Between 1990 to 2020 the agricultural production of the world was increasing at an increasing rate from 824 million tones to 2230 million tones. This is due to increase in the productivity of food grain and non food grain by the use of high yielding varieties of seeds, fertilizers, development of irrigation facilities and mechanization of agriculture etc.,

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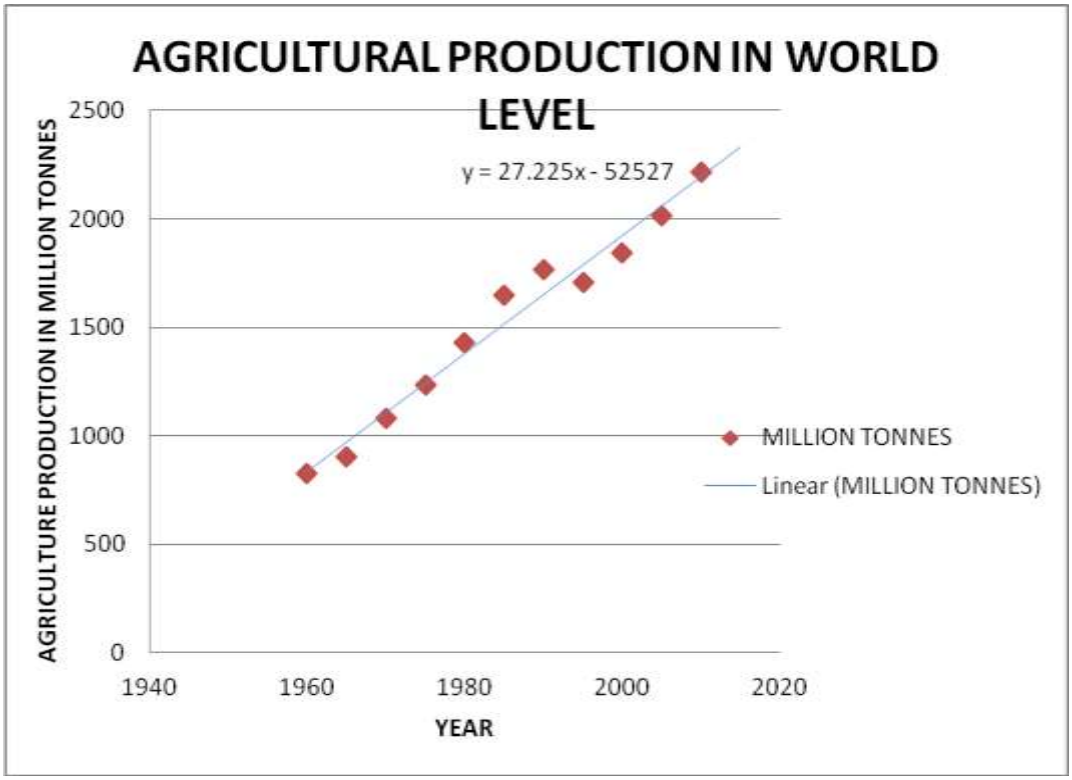

Theabove picture toodepicts the value of increase in the supply of foodgrain.The linear equation y=27.225x-52527 was used to find out the value of the food grain during the year 2015 and 2020. The increase in the value of the food grain was stable in the midyears. This may be due to the increase in the technology, use of fertilizer, pesticides and use of hybrid seeds.

TABLE :2

POPULATION GROWTH AND AGRICULTURAL GROWTH IN WORLD LEVEL

YEAR	POPULATION GROWTH	AGRICULTURAL GROWTH
1960	3,018	824
1965	3,322	905
1970	3,682	1,079
1975	4,061	1,237
1980	4,440	1,429
1985	4,853	1,647
1990	5,310	1,769
1995	5,735	1,707
2000	6,127	1,846
2005	6,520	2,017
2010	6,930	2,213

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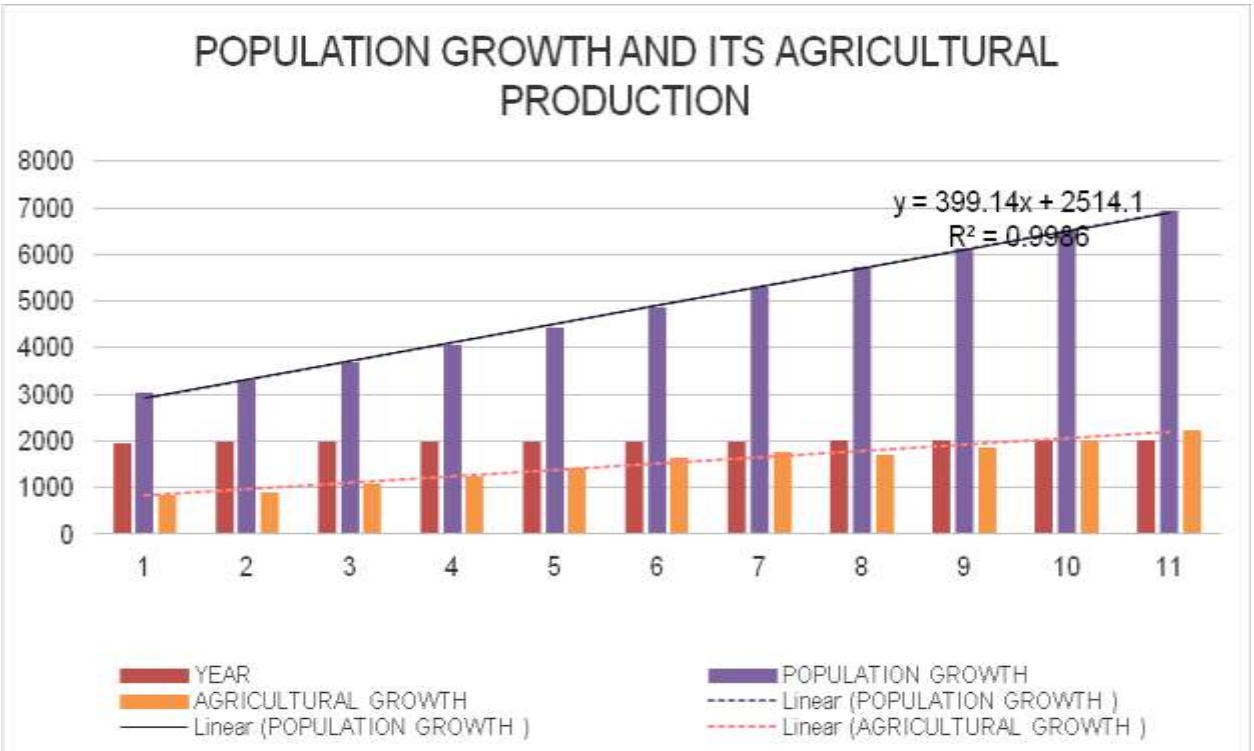
Source:Our world data.in



The above figure depicts the relation exist between the population and the food supply.Two separate linear equations wereframed for the population and food supply. This figure does not validates the views of Malthus.

MALTHUSIAN THEORY AND LAW OF DIMINISHING RETURN:

Malthusian theory of population is intimately connected with the law of diminishing returns.With the growth of population more land may be brought under cultivation orexisting land may be cultivated more intensively. In any way diminishing returns is bound to operate.That is,the rate of increase in food supply can only be at a diminishing rate.So Malthus concluded that populationhas a tendency to out strip food supply.

TABLE: 3 RELATIONS BETWEEN POPULATION AND FOOD SUPPLY

YEAR	POPULATION (MILLION)	GEOMETRIC RATE	FOOD SUPPLY (TONNES)	ARITHMETRIC RATE
1960	3018	3018*2=6026	824	8
1965	3322		905	13
1970	3682		1079	18
1975	4061		1237	23
1980	4440		1429	28
1985	4853		1647	33

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1990	5310	6,026	1769	38
1995	5735	5735*2=11470	1707	43
2000	6127		1846	48
2005	6520		2017	53
2010	6930		2213	58
2015	7349		2020	63
2020	7795	11,470	2230	68

Source: our world in data.org/Famines

The relationship between population and food supply is explained in the above table. Population increases in the geometric ratio i.e,in the order of 2,4,8,16,.At this rate, the rate of growth in population would tend to double itself in every 25 years. In 1960 the population was 3018 million. By 25 years(ie)in 1990 the growth rate of population would have to be 6026 million. For the next 25 years(i.e)2020 the growth of the population would have to be 11,470 million. But actually the growth of population was only 7795 million. The growth of population have not increased in the geometrical ratio as was said by Malthus. As a result of which the theory was proved to be myth.

The growth of food supply should have to be increased by arithmetic ratio. The growth of food supply from 1960 to2020 was only2230 million tonnes, but as per the theory, it would have to be increased to6800million tonnes. It can be concluded that the population was not considered by the availability of food grains. More over the growth of population was kept under control by various factor such as death, famine,and war.The growth of population was feed by the modern technique practiced in agriculture. Hence there is no validity exists between the two variables.

The food supply which grows by arithmetic ratio was shown in the table (i.e)the growth of food supply was only824 million tonnes. In the next five years, the growth of food supply would have increased by 13 million and so on. But the rate of supply food production was not as much as it was expected. The increase in the supply of food was less than the growth of population because of the diminishing rate of return. Therefore Malthusian theory was proved to be myth. Thus the relationship between the food supply and the population was analyzed with the help of extrapolation by using the linear equation y=399.14x+2514.1 and the r2 value 0.9986 was proved.

BIRTH RATE:

The birth rate technically is the total number of live birth per 1000 in a population in a year or period. The average global birth rate is 25.9 birth per 1000 total population in 1990 and it shrink to18.7 birth per 1000 total population in2017.

TABLE :4 WORLDWIDE BIRTH RATE

YEAR	BILLION

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1990	25.9
2000	21.6
2009	20.0
2010	19.8
2011	19.7
2012	19.6
2013	19.4
2014	19.3
2015	19.1
2016	19.0
2017	18.7

Source: OurWorldinData.Org/Famines

The social structure, religious beliefs, economic prosperity and urbanization within each country are likely to affect birth rate as well as abortion rate. Developed countries tend to have a lower fertility rate due to life style choice associated with economic affluence where morality rates are low. Birth control is easily accessible and children often can become an economic drain caused by housing, education cost, other cost involved in bringing up the children. Higher educational and professional careers often mean that women have children late in life. This has resulted in change in population.

DEATH RATES:

Death rates indicates the number of deaths occurring during the year, per 1000 population estimated at midyear subtracting the crude death rate from the crude birth rate provides the rate of natural increase, which is equal to the rate of population change in the absence of migration.

TABLE :5 WORLDWIDE DEATH RATE

YEAR	DEATH RATE
1990	9.2
2000	8.5
2009	7.9
2010	7.9
2011	7.8
2012	7.8
2013	7.7
2014	7.7
2015	7.7
2016	7.6
2017	7.6

Source: OurWorldinData.Org/Famines

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In 2017 death rate for the world was 7.6 per 1000 people. Between 1990 and 2017 the death rate of the world was declining at a moderate rate which shrinks from 9.2 per 1000 people to 7.6 per 1000 people. Population growth and ageing factor plays an important role in the total increase in number of death. This influence has been even greater for communicable, maternal, neonatal and nutritional diseases alone. It would have resulted in a30 percent decline in death

CRITICISM:

Malthusian theory of population has been widely discussed and criticized. Some of the criticisms are as follows:

1. **MATHEMATICAL FORM OF THEORY IS WRONG:**

   The mathematical formulation of the Malthus doctrine that food supply increases in arithmetic progression and population increases in geometrical progression in 25years has not been proved. Rather, the food supply has increased more than in the arithmetical progression while population growth has not been in geometrical progression so as to double the population in 25 years.

2. **FAILED TO FORESEE THE OPENING UP OF NEW AREAS**:

   Malthus had a narrow vision and was particularly influenced by local condition in England. He failed to foresee the opening up of new area, where extensive farming of virgin lands lead to increased production of food. As a result various countries have been provided with plenty of cheap food. No country need fear starvation and misery, if it does not produce sufficient for its increasing population these days.

3. **NEGLECTED THE MAN POWER ASPECT IN POPULATION**:

   One of the principal weakness of Malthus thought that he neglected the manpower aspect in population growth. He was a pessimist and dreaded every man and he has forgotten that a baby comes to the world not only with a mouth and a stomach, but also with a pair of hands. This implies that an increase in population means an increase in manpower which may tends to increase not only agricultural but also industrial production and thus makes the country rich by an equitable distribution of wealth and income.

4. **POPULATION,NOT ONLY RELATED TO FOOD SUPPLY BUT TO TOTAL WEALTH**:

   The Malthusian theory rests on a weak relationship between population and food supply. In fact the right relationship is between population and the total wealth of the country. This is the basis of the optimum theory of population. The argument is that if acountry is rich materially and even if it does not produce enough food for its population, it can feed the people well by importing food stuffs in exchange for its products or money.

5. **INCREASE IN POPULATION IS THE RESULT OF DECLINING DEATH RATE**:

   The Malthusian theory is one-sided. It takes the increase in population as the result of a rising birth rate, whereas it has grown considerably in the world over due to a decline in death

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rate. Malthus could foresee the marvelous advancement in the field of medical sciences which have controlled fatal diseases and made human life longer.

6. EMPIRICAL EVIDENCE PROVES THIS THEORY WRONG:

Empirically, it has been proved by demographist that population growth is a function of the level of per capita income. When per capita income increases rapidly, it lowers the fertility rate and the rate of population declines

7. POSITIVE CHECKS NOT DUE TO OVER-POPULATION:

Malthus pessimism and religious education led him to believe that over population was a heavy burden on the earth which was automatically lessened by god in the form of misery, wars, famines,floods,diseases,pestilenceetc. But all these are natural calamities which are not peculiar to over-populated countries.

8. MALTHUS A FALSE PROPHET:

The Malthusian theory is not applicable to countries for which this was propounded. His prophecy that misery will stalk these countries if they fail to check the growth of population through preventive check has been proved wrong by a decline in birthrate, adequacy of food supply and in agricultural and industrial production. Thus Malthus has proved to be a false prophet.

CONCLUSION:

But in reality the growth rate of population was not in a geometric rate and the food supply was not in arithmetic rate. The role of medicine, technology which are too advanced in the modern period were not taken into account. But it is the fact that the Malthusian theory of population was the basis for the other theory of population and it too act as an alarm for every country to have a certain rate of growth and to avoid over population in the country.The governments also have the planning in such a way to have a planned growth so as to utilize their natural resources to feed the population.

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