International Journal of Research
ISSN: 2348-6848 Vol-4, Special Issue-16
1st EduIndex® International Conference on Science Changes the World held on 28-29th November 2017at **Edupedia Publications Pvt Ltd**, New Delhi

Theory of Population

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ABSTRACT

The thrust of the paper is on theory of population. An Essay on the Principle of Population, Malthus Thomas examined the relationship between population growth and resources. From this, he developed the Malthusian theory of population growth in which he wrote that population growth occurs exponentially, so it increases according to birth rate. Further, Neo-Malthusians Robert Kaplan and Thomas Fraser expanded Malthus' ideas to more than just food, but to also include energy resources. They argued that wars and civil violence would increase as food, clean air, fuel, and suitable farmland become scarcer. Consequently, Karl Marx (1818 – 1883) rejected Malthus' ideas of natural order of population increase. He instead argues that capitalism drives population growth as a way to increase pool of cheap labour. William Catton (1926 -) Overshoot; the ecological basis for revolution and Links population with "carrying capacity of ecosystems, the cornucopian myth, inaccurate belief the earth is limitless, as humans over-exert the earth's resources they will eventually pay the price, environmental damage and new Technologies adopted without knowing implications. However, in the 20th Century Thought Esther Boserup was of the idea of optimistic view of population growth and that as population approached crisis the world would respond with assistance spawning economic growth and new technologies. Julian Simon added that Population growth spurs economic development and more people mean more ideas. The thesis will however lay more emphasis on the first three (3) early theories of population the Malthusian Theory of Population, the Demographic Transition Theory of Population and the Optimum Theory of Population:

Keywords: Birth rate, Economic development, Economic growth, Food, Growth, Population,

1.0 INTRODUCTION

Population implies to all the inhabitants of a particular place. Population is the people who inhabit a territory or state or the number of inhabitants (either the total number or the number of a particular race or class) in a given place (country or city etc.). The ideological and ethical foundations of population theory are examined in the light of the supposed ethical neutrality of scientific enquiry. The works of Malthus, Ricardo, and Marx are contrasted and it is shown that their theories of population resulted in each case from the adoption of a particular kind of method--empiricism in Malthus, normative analytic "model building" in Ricardo, and dialectical materialism in Marx. It is shown that a Malthusian or neo-Malthusian view of the population problem is inevitable if enquiry is founded in empiricism or in normative analytics.

A population is a summation of all the organisms of the same group or species, which live in the same geographical area, and have the capability of interbreeding. In ecology, the population of a certain species in a certain area is estimated using the Lincoln Index. The area that is used to define a sexual population is defined as the area where inter-breeding is potentially possible between any pair within the area. The probability of interbreeding is greater than the probability of crossbreeding with individuals from other areas. Under normal conditions, breeding is substantially more common within the area than across the border. In sociology, population refers to a collection of human beings. Demography is a social science, which entails the statistical study of human populations. This article refers mainly to human population. Thus, in this research work population refers to the total number of people living certain area within a certain or stipulated period of time.

2.0 LITERATURE REVIEW

2.1 The Malthusian Theory of Population

Malthus's early writings were pamphlets that addressed economic and political issues of his time. In opposition to the popular 18th century European view that society was constantly improving, he wrote about the dangers of excessive population growth. Thomas Malthus was the first economist to declare a methodical doctrine of population in the year 1798. This theory was regarded a highly contentious since it had many incorrect senses with the economic changes that occurred in Europe in 19th and 20th century.

Figure 1

Picture Above: Thomas Robert Malthus

In his 1798 work, An Essay on the Principle of Population, Malthus examined the relationship between population growth and resources. From this, he developed the Malthusian theory of population growth in which he wrote that population growth occurs exponentially, so it increases according to birth rate. Let us see what Malthusian Theory had to say. Thomas Robert Malthus enunciated his views about population in his famous book, Essay on the Principle of Population as it affects the Future Improvement of Society, published in 1798. Malthus revolted against the prevailing optimism shared by his father and Godwin that a perfect state could be attained if human restraints could be removed. Malthus objection was that the pressure of increasing population on the food supply would destroy

perfection and there would be misery in the world. For example, if every member of a family tree reproduces, the tree will continue to grow with each generation. On the other hand, food production increases arithmetically, so it only increases at given points in time. Malthus wrote that, left unchecked, populations can outgrow their resources.

Malthus was severely criticised for his pessimistic views, which led him to travel on the continent of Europe to gather data in support of his thesis. Malthus appalled against the existing sanguinity shared by his father and Godwin that an ideal state could be accomplished if human fetters could be isolated. Malthus' hostility was that the heaviness of mounting population on the food supply would devastate perfection and there would be depression in the world. Malthus was relentlessly censured for his cynical outlook, which directed him to trek on the continent of Europe to congregate statistics in sustaining his hypothesis. He incorporated his researches in the second edition of his Essay published in 1803. The Malthusian theory explains the relationship between the growth in food supply and in population. It states that population increases faster than food supply and if unchecked leads to vice or misery. According to Malthus, there are two types of 'checks' that can reduce a population's growth rate. Preventive checks are voluntary actions people can take to avoid contributing to the population. Because of his religious beliefs, he supported a concept he called moral restraint, in which people resist the urge to marry and reproduce until they are capable of supporting a family. This often means waiting until a later age to marry. He also wrote that there are 'immoral' ways to check a population, such as vices, adultery, prostitution, and birth control. Due to his beliefs, he favoured moral restraint and didn't support the latter practices.

Malthusian Theory elucidates the affiliation amidst the growth in food supply and in population. It declares that population amplifies quicker than the food supply and if unimpeded it would consequent to desolation. The principles are:

i. There are natural combining of genetic traits in human beings to increase at a fast rate. Therefore, increase in population in statistical sequence if unimpeded two-folds itself every 25 years. There is a natural sex instinct in human beings to increase at a fast rate. As a result, population increases in geometrical progression and if unchecked doubles itself every 25 years. Thus starting from 1, population in successive periods of 25 years will be 1, 2, 4, 8, 16, 32, 64, 128, 256 (after 200 years).
ii. On the other hand, the food supply increases in a slow numerical sequence due to the function of that law of diminishing returns based on the presumption that the supply of land is invariable. On the other hand, the food supply increases in a slow arithmetical progression due to the operation of the law of diminishing returns based on the supposition that the supply of land is constant. Thus the food supply in successive similar periods will be 1, 2, 3, 4, 5, 6, 7, 8, and 9 (after 200 years).
iii. Since population increases in statistical progression and the food supply in the numerical sequence, population is likely to elude food supply. Thus an imbalance is created which directs to over populace. Since population increases in geometrical progression and the

food supply in arithmetical progression, population tends to outrun food supply. Thus an imbalance is created which leads to over-population.
This is depicted in **Figure 2**

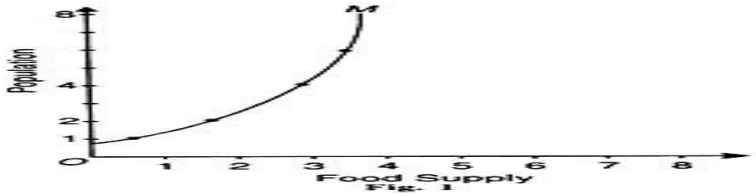


Fig. 1

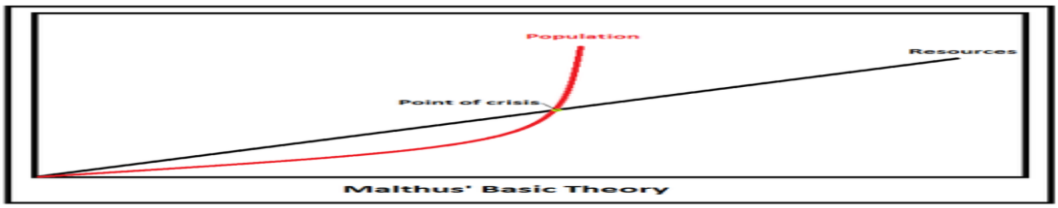
The food supply in arithmetical progression is measured on the horizontal axis and the population in geometrical progression on the vertical axis. The curve M is the Malthusian population curve, which shows the relation between population growth and increase in food supply. It rises upward swiftly.

To control over population consequent from imbalance of food and populace, Malthus proposed preventive measures and optimum checks. To control over-population resulting from the imbalance between population and food supply, Malthus suggested preventive checks and positive checks. A man to control the birth rate applies the preventive checks. They are foresight, late marriage, celibacy, moral restraint, etc.

If people fail to check growth of population by the adoption of preventive checks, positive checks operate in the form of vice, misery, famine, war, disease, pestilence, floods and other natural calamities, which tend to reduce population and thereby bring a balance with food supply. Positive checks to population growth are things that may shorten the average lifespan, such as disease, warfare, famine, and poor living and working environments. According to Malthus, eventually these positive checks would result in a Malthusian catastrophe (also sometimes called a Malthusian crisis), which is a forced return of a population to basic survival. The Irish potato famine of the 19th century has been considered a classic example of a Malthusian catastrophe. In addition to dealing with political and economic relations with England and fragmentation of their land, the rapidly growing Irish population was running out of food.

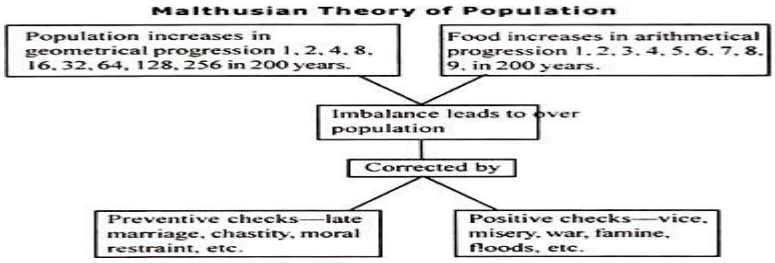
There are often other factors involved in events that could be labelled as Malthusian catastrophes; so many scholars take caution when providing modern examples.

Figure 3



According to Malthus, preventive checks are always in operation in a civilized society, for positive checks are crude. Malthus appealed to his countrymen to adopt preventive checks in order to avoid vice or misery resulting from the positive checks.

Malthus doctrine is illustrated below in **Figure 4**



➢ Criticism

Malthus' views have been widely challenged on many grounds. The main criti-cisms about his theory are as under:

- Mathematical form of the theory is wrong. The mathematical formulation of Malthus' doctrine that food supply increases in arithmetical progression and population increases in geometrical progression in 25 years have not been proved empirically. Rather, the food supply has increased more than in the arithmetical progression while population growth has not been in geometrical progression to double the population in 25 years. However, this criticism is beside the point because Malthus used his mathematical formulation to make his principle clear in the first edition of his Essay and deleted it in its second edition.
- He failed to foresee the opening up of New Areas. Malthus had a narrow vision and was particularly influenced by local conditions in England. He failed to foresee the opening up of new areas of Australia, the United States and Argentina where extensive farming of virgin lands led to increased production of food. As a result, countries like England on the continent of Europe have been provided with abundant supplies of cheap food. This has been made possible with rapid improvements in the means of transport, a factor almost overlooked by Malthus. No country need fear starvation and misery if it does not produce sufficient for its increasing population these days.

- His critics have questioned the validity of his two sets of ratios. It is argued that population has rarely grown in geometrical proportion and means of production have rarely multiplied in arithmetic progression. Thus, the geometrical and arithmetical theory was incorrect regarding population and food supply. He failed to anticipate the opening up of new areas in other countries like US, Australia and Argentina, which had extensive farming. His law of mathematical progression regarding food supply pertain to any one point of time and not as a whole. One of the chief weakness of this theory is he failed to evaluate the man power. Malthusian failed to analyse and compare populace with the national wealth, instead he compared just with the food supply. Malthus only requested his men to control birth rate and was one sided. He failed to look into death rate, which is diminishing which is the ultimate cause of population. In reality, pragmatic evidence substantiates this thesis to be incorrect. Actually, the population has to be matched up with the per capita income since when this increases, the fertility rate is lowered and the population rate declines. Preventive measures cannot be taken in the case of ethical moderation, late marriage, celibacy etc. to control population rate. Thus, Malthus is regarded as a false mystic.
- Preventive Checks do not pertain to Moral Restraint. Malthus was essentially a religious man who laid emphasis on moral restraint, celibacy, late marriage, etc. to control population. But he could not visualize that human beings would invent contraceptives and other family planning devices for birth control. This was perhaps because he could not make any distinction between sexual desire and the desire to have children. People have sexual desire but they do not want to have more children. Thus moral restraint alone cannot help to control the increase in population which Malthus suggested. Family Planning is essential as a preventive check.
- Both the positive checks of hunger and disease referred to by Malthus do not operate today, except the terrible disaster sometimes caused by Tsunami, Katrina, Rita and floods or rains in desert areas like Banner and Jaisalmer in August 2006. However, catastrophe of this nature in any part of the world is immediately rushed to the affected place from surplus areas all over the world. A marked decline in the death rate even in the developing countries is a significant factor in the context of the population spurt.
- Malthusian prophecy was false. The Malthusian theory is not applicable to countries for which this was propounded. In the western European countries, the bogey and pessimism of Malthus has been overcome. His prophecy that misery will stalk these countries if they fail to check the growth of population through preventive checks has been proved wrong by a decline in birth rate, adequacy of food supply, and increase in agricultural and industrial production. Thus Malthus has proved to be a false prophet.
- Malthus was also severely criticized for ignoring the role of changing technology and the consequent transformation in socio-economic set-up of a society. He did not fully

appreciate the extent to which improved agricultural technology and crop fertilization could sustain large population. Neo-Malthusians agree that there are absolute limits on food supply, energy and other resources. Furthermore, they suggest that the problem is intensified by the disproportionate consumption of such resources by so-called developed (industrialized) actions. Other researchers have challenged this formulation.

- Moreover, natural calamities referred to above have occurred in under--populated areas also and thus there was no causal relationship between positive checks and overpopulation.
- Malthus also failed to realize even the biological limitations that a population cannot grow beyond a certain limits.
- Its applicability is not okay. Despite weakness, Malthusian doctrine contains much truth. This thesis may not be applicable to the countries like England and Europe but for some other countries, which has a meagre landscape. In fact, the people of Europe were made miser by Malthus who forewarned them of the evils of the over populace. The very fact that people use preventive measures like late marriage, birth rate control on an extensive scale and various other contraceptives evidences the significance of the Malthusian Law. Thus, Malthusian thesis is applicable to the countries like India. Walker was right when he wrote, "The Malthusian Theory is applicable to all communities without any consideration of colour and place. Malthusian has stood unshattered, impregnable amid all the controversy that has regard around it."
- He neglected the Manpower Aspect in Population. One of the principal weaknesses of Malthus' thought has been that he neglected the manpower aspect in population growth. He was a pessimist and dreaded every increase in population. He forgot, according to Cannan, 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 tend to increase not only agricultural but also industrial production and thus makes the country rich by an equitable distribution of wealth and income. As rightly pointed out by Seligman "The problem of population is not merely one of mere size but of efficient production and equitable distribution." Thus, the increase in population may be necessary.
- 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, pestilence, etc. Nevertheless, all these are natural calamities, which are not peculiar to over-populated countries. They visit even those countries where the population is on the decline or stationary, such as France and Japan

2.2 Theory of Demographic Transition

The theory of demographic transition is based on the actual population trends of advanced countries of the world. According to this theory, every country passes through three different stages of population growth. In the first stage, the birth rate and the death rate are high and the growth rate of population is low. In the second stage, the birth rate remains stable but the death rate falls rapidly. Demographic transition (DT) is the transition from high birth and death rates to lower birth and death rates as a country or region develops from a pre-industrial to an industrialized economic system.

Demographic transition is a term, first used by Warren S. Thompson (1929), and later on by Frank W. Notestein (1945), referring to a historical process of change which accounts the trends in births, deaths and population growth that occurred in today's industrialized societies, especially European societies. This process of demographic change began for the most part in the later 18th century.

As a result, the growth rate of population increases very swiftly. In the last stage, the birth rate starts falling and tends to equal the death rate. The growth rate of population is very slow. These three stages are explained in the Figure 5.

In the figure, the time for different stages is taken on the horizontal axis and annual birth and death rates per thousand on the vertical axis. In the first stage, before the 19th century, birth rates in Western Europe were 35 per thousand and death rates fluctuated around 30 per thousand. Thus, the growth rate of population was about 5 per thousand.

In the second stage, death rates began to decline gradually from 30 per thousand to 20 per thousand from the middle of the 19th century to the end of the century. In the third stage beginning with the 20th century, birth rates began to decline from 20 per thousand and have continued for about a century now, nearing 15 per thousand. Death rates also continued to decline but seem to have stabilized between 10 to 55 per thousand in Western Europe.

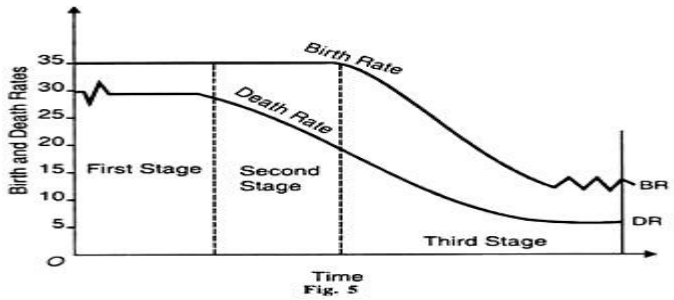


Fig. 5

In the first stage of transition, death rates (especially the infant deaths) begin to fall as a result of advances in public health and sanitation as well as improvements in nutrition and food supply. Since the birth rate continues to remain high relative to the declining death rate, there is a rapid 'transitional' growth as we find in India today. The mortality rate is the highest among the children and the next among women of child-bearing age. Thus unhygienic conditions, poor diet and the lack of medical facilities are the reasons for a high mortality rate in this stage. This stage continued in Western Europe approximately up to 1840.

In the second stage, the economy enters the phase of economic growth. Agricultural and industrial productivity increases and the means of transport develop. There is greater mobility of labour. Education expands. Incomes increase. People get more and better quality food products. Medical and health facilities are expanded. The people use modern drugs. All these factors bring down the death rate. However, the birth rate is almost stable. The diffusion of knowledge and cheap medical technology has brought many non-industrial societies into this stage of the demographic transition however; these societies have been unable to enter the third stage. The result has been very high rates of population growth in countries that are not experiencing corresponding economic growth.

In the third (Last) stage, the fertility rate declines and tends to equal the death rate so that the growth rate of population declines. As growth gains momentum and people cross the subsistence level of income, their standard of living rises. In the last stage of demographic transition birth and death rates decline appreciably which eventually becomes approximately equal, and in time it will result in zero population growth. Before this stage begins, there can be one more stage in which low birth and death rates lead to slow population growth.

Men and women prefer to marry late. The desire to have more children to supplement parental income declines. People readily adopt family planning devices. They prefer to go in for a baby car rather than a baby. Moreover, increased specialisation following rising income levels and the consequent social and economic mobility make it costly and inconvenient to rear a large number of children. The growth pattern of human populations is thus held to be S-shaped, involving a transition from one type of demographic stability with high death rates to another type of plateau with low death and birth rates. Among the later demographers, Coale and Hoover further elaborated upon the role of development and modernization in the process of transition in demographic behaviour, maintained that a society characterized by peasant economy is marked with very high birth and death rates. Death rates are high because of lack of adequate nutritive food, primitive sanitary conditions and absence of any preventive and curative measures of control over diseases. A high birth rate, on the other hand, is a functional response to high death rates, particularly among infants and children.

All this tends to reduce the birth rate, which along with an already low death rate brings a decline in the growth rate of population. The advanced countries of the world are passing through this last stage and the population is increasing at a slow pace in them. Thus, n the present-day world, as would be true of any point in time, different countries of the world are at different stages of the demographic transition. In the opinion of Glenn Trewartha (1969), this is largely due to the dual nature of man.

According to him, biologically, man is same everywhere and is engaged in the process of reproduction but culturally man differs from one part of the world to another. It is the cultural diversity of man that gives rise to varying fertility patterns in different areas resulting in different stages of demographic transition discussed above.

- **Criticism**

Although the theory of demographic transition has been appreciated widely by the demographers, it has been criticized on many grounds also. There are even critics who have gone to the extent of saying that it cannot be called a theory. The criticisms are:

- This theory is merely based upon the empirical observations or the experiences of Europe, America and Australia.
- It is neither predictive nor its stages are segmental and inevitable.
- The role of man's technical innovations cannot be underrated, particu-larly in the field of medicine, which can arrest the rate of mortality.
- Neither does it provide a fundamental explanation of the process of fertility decline, nor does it identify the crucial variables involved in it.
- It does not provide a time frame for a country to move from one stage to another.
- It does not hold good for the developing countries of the world, which have recently experienced unprecedented growth in population due to drastic decline in death rates.

In spite of these criticisms and shortcomings, the demographic transition theory does provide an effective portrayal of the world's demographic history at macro level of generalizations. As an empirical generalization developed based on observing the demographic trend in the West, the transition process for any country can easily be understood. In all fairness, it must be mentioned at this point that Note stein, who propounded this theory, was aware of its limitations. Nonetheless, he was of the opinion that the principle drawn from the European experience would be applicable to other parts of the world. The most crucial question to be considered is: "Can the theory demographic transition be applied to developing countries?" It is well known that developing countries have recently experienced a phenomenal reduction in death rates, as a result of which there has en a tremendous increase in the rates of population growth.

2.3 The Optimum Theory of Population

The optimum theory of population was propounded by Edwin Cannan in his book Wealth published in 1924 and popularized by Robbins, Dalton and Carr-Saunders. Unlike the Malthusian theory, the optimum theory does not establish relationship between population growth and food supply. Rather, it is concerned with the relation between the size of population and production of wealth. Criticizing the approach of the Malthusian Theory of Population, modern economists Edwin Cannan and Carr Saunders of London School of Economics have developed a new theory known as Optimum Theory of Population. It is also called modern theory of population. In recent years, Prof. Robbins, Dalton and Carr-Saunders have refined and polished the theory and put it in a more presentable form. This theory is an improvement over the Malthusian Theory.

The population which has the highest per capita income is known as optimum population". Optimum Population: The economists like Carr Saunders considered 'optimum population' as that which produces maximum welfare. On the other hand, Prof. Cannan defined this theory in terms of 'return to labour'.

- **Statement of the Theory**

The founders of the theory state it as "Given the natural resources, stock of capital and the state of technical knowledge, there will be a definite size of population with the per capita income. The population, which has the highest per capita income, is known as optimum population.

- Optimum Population: The economists like Carr Saunders considered 'optimum population' as that which produces maximum welfare. On the other hand, Prof. Cannan defined this theory in terms of 'return to labour'. He remarked, "Knowledge and circumstances remaining the same, there is what may be called maximum return when the amount of labour is such that both an increase and decrease in it would diminish proportionate return." Similarly, Bounding has rightly observed, "Optimum population is that at which standard of living is maximum.
- Under Population: If the actual population in a country is less than the optimum or ideal population, there will not be enough people to exploit all the resources of the country fully. Thus, the population and the per capita income will be lower. In other words, if the per capita income is low due to too few people, the population is then under population.
- Over Population: If the actual population is above the level of optimum population, there will be too many people to work efficiently and produce the maximum goods and the highest per capita income. As a result, the per capita income becomes poorer than before. This is the stage of over population. In other words, if the per capita income is low due to too many people, the population under these circumstances would be over population.

➢ The optimum theory of population is superior to the Malthusian theory on the following grounds:
- The optimum theory is superior to the Malthusian theory because it studies the population problem in relation to the economic conditions of a particular country.
- Malthus had a narrow vision. He related the growth of population to food supply. Cannan, on the other hand, had a much wider outlook. He related the problem of population to the total production of the country, both industrial and agricultural.
- The Malthusian theory is a static concept which applies to a period of time. The optimum theory is a dynamic one because over a period of time the per capita income may rise with the expansion in output due to improvements in knowledge, skill, capital equipment and other elements in production. This may raise the optimum level of population. Thus, the optimum theory is more realistic.
- The optimum theory is very practical because it regards an increase in population not only desirable but also necessary for the maximum utilisation of the country's natural resources unlike Malthusian doctrine which is simply theoretical and is devoid of all practical considerations.
- Malthusian theory has unrealistic assumption while the optimum theory takes a realistic view with the law of diminishing returns.

➢ **Merits of the Theory:**

- Comprehensive Approach: It explains the problems of population in a comprehensive way from the production side. It also explains the relationship between productive efficiency and production.
- Qualitative Nature of the Theory: Prof. Bye said, "Optimum population is difficult to find because size of population must lead to the fullest development of social and economic life."
- Pragmatic Approach: This theory is also pragmatic, i.e. it is concerned with practical results.
- More Detailed Analysis: The optimum theory of population provides more detailed analysis as it considers over and under- population and brings out the evils of both.

➢ **Criticisms**

Despite the superiority of the optimum theory over the Malthusian theory of population, it has serious weaknesses.

- No Evidence of Optimum Level: The first weakness of the optimum theory is that it is difficult to say whether there is anything like an optimum population. There is no evidence about g the optimum population level in any country.
- Static Theory: The optimum theory is criticized as a static short period theory because it ignores changes in natural and human resources, which affect per capita income.
- Impossible To Measure Optimum Level: It is impossible to measure the optimum level quantitatively. As pointed out by 2 Prof. Bye, it is "impossible to calculate it with any semblance of m exactness for any country at any time."
- Neglects Biological and Sociological Factors, which govern the size and growth of population.
- Correct Measurement of Per Capita Income not Possible.
- Not a Realistic Theory because it points out that two assumptions on which the theory has been based, are not realistic.
- Neglects the Distributional Aspect of increase in Per Capita Income.
- Only Economic Factors Considered and the theory takes into account purely economic factors, which determine the optimum size of the population of a country.
- Not practicable as the optimum theory is not practicable as it is not fixed
- Optimum Level not fixed but oscillating: Thus, the concept of the optimum population assumes that the techniques of production, the stock of capital and natural resources, the habits and tastes of the people, the ratio of working population to total population, and the modes of business organisation are constant

3.0 CONCLUSION

Despite these weaknesses, the Malthusian doctrine contains much truth. The Malthusian doctrine may not be applicable to the Western Europe and England but its principal tools have become the part of the people of these countries. If these lands do not face the problems of over-population and misery, it is all due to the bogey and pessimism of Malthusianism. Despite weakness, Malthusian doctrine contains much truth. This thesis may not be applicable to the countries like England and Europe but for some other countries, which has a meagre landscape. In fact, the people of Europe were made miser by Malthus who forewarned them of the evils of the over populace. The very fact that people use preventive checks, like late marriage and various contraceptives and birth control measures on an extensive scale proves the vitality of the Malthusian law.

Even famous economists like Marshall and Pigou and sociologists like Darwin were influenced by this principle when they incorporated it in their theories. In addition, Keynes, initially overawed by the Malthusian fears of over-population, later wrote about “Some Economic Consequences of Declining Population.” Is it not the fear of Malthusianism, which has created the problem of declining population in France? The very fact that people use preventive measures like late marriage, birth rate control on an extensive scale and various other contraceptives evidences the significance of the Malthusian Law. Thus Malthusian thesis is applicable to the countries like India. Walker was right when he wrote "The Malthusian Theory is applicable to all communities without any consideration of colour and place. Malthusian has stood unshattered, impregnable amid all the controversy that has regard around it." The Malthusian doctrine may not be applicable now to its place of origin, but its influence spreads over two-third of this universe. Excluding Japan, the whole of Asia, Africa and South America come under its purview. India is one of the first countries to adopt family planning on state level to control population.

The demographic transition model, in isolation, can be taken to predict that birth rates will continue to go down, as societies grow increasingly wealthy. However, recent data contradicts this, suggesting that beyond a certain level of development birth rates increase again. In addition, in the very long term, the demographic transition should be reversed via evolutionary pressure for higher fertility and higher mortality. The existence of some kind of demographic transition is widely accepted in the social sciences because of the well-established historical correlation linking dropping fertility to social and economic development. Scholars debate whether industrialization and higher incomes lead to lower population, or whether lower populations lead to industrialization and higher incomes. Scholars also debate to what extent various proposed and sometimes inter-related factors such as higher per capita income, higher female income, lower mortality, old-age security, and rise of demand for human capital are involved. Many developing countries have, therefore, adopted family planning programmes directly geared to influence fertility negatively. In such a situation, it is difficult to maintain with any degree of confidence that the theory of demographic transition is also applicable to developing countries and that what happened in the West, in respect of population growth, would be duplicated in developing countries.

Finally, despite so much criticism levelled against optimum theory, it is surely said that it is an improvement over Malthusian Theory. The optimum theory is an important landmark in the science of demography. It is valuable because it enables us to overcome the bogey of

Malthusianism and give us a test of progress (in per capita income). However, this theory is not useful in social life due to its static nature. Thus, it is not a guiding principle to any economic policy. It requires being re-casted in a dynamic setting for making it more successful.

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