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## Malthus and Becker: Who Was Right?

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### Classical Economic of Growth: Malthusian Theory

Historically, classical economists founded the relationship between population growth and real growth on Malthus' Theory of Population and Income. Thomas Robert Malthus introduced in his 1798 *Essay in the Principle of Population* a relationship between population growth and what he termed subsistence. The first grew geometrically while the second increased only at an arithmetic ratio. Thus, he proposed the existence of an inverse relationship between population growth and development derived from the law of diminishing returns. This law is the belief that more people mean fewer goods for each person; thus, as population grows, poverty inevitably increases. He believed that man's ability to increase his food supply was constrained in three particular ways: through land scarcity, limit productive capacity of cultivated land, and the law of diminishing returns. Although he believed his predictions were inevitable, his intent was not to promote government-implemented population control policies. Instead, Malthus upheld the idea of a population optimum where human numbers would be held in balance with supply. This optimum was not to be achieved by promoting contraception but through preventive as well as what he called positive checks, particularly amongst the working classes. The first one was to be achieved through "moral restraint." The second one was to operate in tandem with the preventive checks which he described as "all the causes which tend in any way prematurely to shorten the duration of human life, such as unwholesome occupations, severe labour and exposure to the seasons, bad and insufficient clothing arising from poverty ... the whole train of human diseases and epidemics, wars, infanticide, plague, and famine."<sup>1</sup>

Malthus' problem was that he failed to explore his theory against historical experience: no theory can be said to be scientifically proven if that theory cannot be verified by empirical evidence.

### Malthus' Arguments

Following Malthus' inverse relationship between population and growth, Classical Economic Theory is founded on the following arguments:<sup>2</sup>

- a. *The consumption effect*: For a given amount of resources, population growth affects consumption directly.
- b. *The production effect on private and public goods*: Population growth affects consumption indirectly through the effect on production per worker. With a fixed capital, average production per worker will be lower with a larger labor force (the classical argument of diminishing returns). Along the same lines, with a fixed level of revenue, a larger population will increase the demand

for public services, especially education and health care, thus reducing the quality of these services and indirectly hindering development through the reduction of funds allocated to infrastructure.

c. *Age-Distribution effect*: A faster-growing population implies a larger proportion of children and, given the amount of resources, a smaller output per capita. The effect on women has been added to this argument: the more children born per woman, the less chance she has to work outside the home; this hinders her personal development.

d. *Dilution of Capital*: With a fixed income, population growth reduces savings and human capital (education per person) and therefore reduces physical and human investment.

In summary, the classical theory of population growth, assuming a fixed level of resources, predicts a decrease in per capita income in two ways: more consumers divide any given amount of goods, and each worker produces less because there is less capital, private and public, per worker. In addition, the growing number of young children poses an additional burden in the reduction of consumption because they consume but they do not produce; it also hinders women's development as they may not be able to work outside the home. Finally, population growth hinders economic growth because, by reducing savings and education, it reduces investment. The key made in this theory is the *ceteris paribus* condition (other things being equal) where resources are given and therefore constant.

## The Theory Fails

However, when challenged, this theory fails both theoretically and empirically. Analysis at both levels suggest that there is no statistically proven simple relationship between population growth and economic growth, population size and economic growth, or population growth and environment.<sup>3</sup> The absence of a correlation contradicts the conventional Malthusian deductive conclusion. The only persuasive argument in the face of this absence of correlation, as Simon (1996) points out, is a plausible scenario in which one or more specified variables that have been omitted from the analysis would, in fact, lead to a negative relationship between population growth and economic growth. Thus, results suggest that population growth is not the only relevant variable for development and thus, empirical evidence suggests that Malthus' dynamic growth theory has failed.

From the point of view of the population growth-development trade off argument, evidence shows that most underdeveloped countries that have implemented population control policies, however, have not shown definite signs of success in overcoming the problems of development, problems that are often attributed to the "population trap." In fact, since the seminal work of Coale-Hoover (1958), several studies have followed supporting or contradicting population control policies. In 1986, the National Academy of Science published a study entitled "Population, Growth and Economic Development," in which they studied the effect of slower population growth achieved by the reduction of fertility through national family planning programs. The results were ambiguous.<sup>4</sup> On the other hand, developed countries, such as those in Europe, are facing the threat of an aging population and the consequent problems for public finance and productivity, a situation that I call the "aging trap." On the other hand, no clear

causalities were found, as was previously mentioned between population and growth, population and poverty, or population and environment. Some countries show some correlation between these variables, others do not and in all cases there is no possibility to prove the population size is what facilitated or hampered economic development.

## Human Capital Theory

Nobel prize winner Gary Becker advanced a model that relates the concept of human capital to the family and growth. In it, he proposes an alternative to Malthusian models of economic growth. Becker introduces human capital as an important source of economic development that depends on advances in technological and scientific knowledge. A key assumption of this model is that the rate of return on investments in human capital rises rather than declines as the stock of human capital increases; man is creative and therefore the education of today implies more production in the future. For this reason, resources are not necessarily fixed and may increase as population increases.

In a 1993 paper Becker found that population growth, when studied in the light of human capital theory, leads to multiple equilibrium points: an underdeveloped steady state with high birth rates and low levels of human capital, and a developed steady state with low fertility and high stocks of human and physical capital. He concluded that this means that history and luck are critical determinants of a country's growth experience.<sup>5</sup> Thus, population growth is not the only determining factor in economic development as the Malthusian theory has predicted. Furthermore, he stated that training and educational programs together with physical capital investment are the important factors. He then concluded that developed countries with negative fertility rates and undeveloped countries would benefit from an expansion of both the pool of human capital and strengthening of the family as the principal promoter of education and quality of life. But what about diminishing returns? Becker found the answer to this issue in the increase of labor productivity due to education and consequently rejects the Malthusian assumption of fixed resources. Since the publication of Gary Becker's work in Human Capital, a large body of literature has developed over the past 25 years surrounding this topic. Interest has grown in the importance of the economic agent as an investment rather than solely as an actor in the economy. Following the concept of human capital, recent works have proposed models that relate population to growth.<sup>6</sup> They set forth an alternative to the Malthusian and neo-classical models of economic growth by introducing human capital as an important source of economic development, a source which depends on both technological and scientific knowledge. Such findings have been long sustained by Julian Simon, Norman Macrae, Aaron Wildavsky, Ben Wattenberg, Karl Zinsmeister, and others.

Economic development has not been solely explained by the expansion of physical capital per worker as the neo-classical school has proposed or by the decrease in population as Malthus suggests. Other issues, such as terms of trade, service of the debt, the cost of intermediate goods, and institutional features of each country, including political stability, are all important for developing economies. Yet, it has been the introduction of human capital that has shed new light on the understanding of the development process. A key assumption of human capital growth models is the neutrality assumption on human capital. That is, the rate of return on investments in human capital rises rather than declines as the stock of human capital increases. Man is

creative and therefore the education of children today implies greater production in the future. Consequently, resources are not necessarily fixed, but, rather, they may increase as population increases.

## Endnotes

<sup>1</sup> Malthus (1824), p. 39.

<sup>2</sup> This particular interpretation of Malthusian theory explanation relies heavily on Simon (1996a).

<sup>3</sup> These works include Denison (1985), Rosenberg and Birdzell (1986), Scully (1988), Barro (1989), Simon (1992, 1996), Birdsall (1995), Eberstadt (1995), and Agenor and Montiel (1996).

<sup>4</sup> Mencken (1986) and Simon (1992, 1996) provide a good review of the theories, the empirical evidence, the debates that followed, and the effects of the policies implemented.

<sup>5</sup> Concerning the issue of luck, history, and growth, see Easterly, et al (1993). Barro and Lee (1993), and Long and Summers (1993).

<sup>6</sup> Some of these works are analyzed within an overlapping generation model. See Barro (1974), Razin and Zion (1975), Becker (1974, 1988, 1991, and 1995), Willis (1985). The Journal of Monetary Economics vol. 32, 1993 includes the proceedings of a conference on population and economic growth sponsored by the World Bank