

The Causes and Effects of Population Growth:
According to Adam Smith and Thomas Malthus

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Abstract

Thomas Malthus was one of the first scholars to write about the issues of population growth. He feared that humans would surpass Earth's carrying capacity which would lead to disease, suffering, and ultimately death. He believed that higher wages were the cause of population growth, which was also how the economist Adam Smith explain this phenomenon. However, for Smith, population growth was necessary for economic growth and would ultimately result in greater prosperity in the long run. Both writers failed to recognize how the changing socioeconomic status of women would affect growth rates. Ultimately, it is the predictions of Smith that have held true so far. In fact, many contemporary writers have criticized Malthus for his failure to recognize how technology is able to expand Earth's carrying capacity. However, as concerns about global warming continue to grow, there is still a possibility that it will be Malthus who will be proven correct in the very end.

The Causes and Effects of Population Growth:

According to Adam Smith and Thomas Malthus

An Inquiry Into the Nature and Causes of the Wealth of Nations by Adam Smith and *An Essay on the Principle of Population* by Thomas Malthus both address the topic of population growth. The authors explore the effects of wage level on population growth, moral restraint as a means to slow growth, and the overall economic conditions which result from changes in population. While their evaluation of the short term is similar, they diverge significantly when it comes to their long-run predictions. Smith's overall optimistic perspective and belief in increasing returns to scale leads to the conclusion that population growth is ultimately good for the economy in the long run. Conversely, Malthus' pessimistic view and focus on scarcity and diminishing returns on land produce a far bleaker long-run prediction. From the absolutist perspective, it would seem that Smith's explanation of the results of population growth has been correct so far. However, there may not be anyone left to record it if Malthus' predictions eventually turn out to be correct.

Smith and Malthus agree that the driving force behind population growth is wages greater than subsistence. Smith interprets this phenomenon as exclusively affecting poor people. He wrote that more children are born to those in poverty, therefore poverty does not discourage people from having children (p.96). As evidence, he explains that a poor woman may have 20 children, while a "fine lady" will generally have only 2 or 3. At the same time, being barren is far more common among the wealthy than the working class (p.97). However, the mortality rate for children born into poverty is quite high, which means that few of those children actually make it to adulthood. An increase in wages does not necessarily increase the number of children being born, however, it increases the ability of parents to provide for those children and successfully

raise them to adulthood, which is ultimately what increases the population (p.97). Smith also acknowledged that when wages are high, people marry younger. By marrying younger, couples increase their chances of having more children (p.88). Not only does an increase in births and a decrease in infant mortality increase the current population, but once this generation reaches reproductive age, the future population is also increased as they have children of their own. The higher rate of increase among the lower or working class is also the result of lower juvenile mortality due to higher wages. An increase in the working class means that the labor force increases, but without the labor fund also increasing. As the labor force increases, the supply of labor increases but not the demand or ability to pay for labor, which results in a surplus of workers with lower wages and increased unemployment in the short run (p.97). For people who are already existing right at subsistence, lower wages result in the inability to provide their most basic needs, which results in misery.

Malthus' interpretation of population growth begins in a similar way. He also writes that an increase in wages, above subsistence, leads to an increase in population (p.21). At the same time, he acknowledges that when wages are low, raising a family is so difficult that growth is slowed (p.22). This can be interpreted as being essentially the same as Smith's explanation that poverty does not prevent children, and higher wages improve the fate of the children already being born. However, Malthus adds that the sexual urges of men are another force that must be overcome. He writes that man is "impelled" by a "powerful instinct" to "increase his species" (p.4), and subsequently encourages them to exercise "moral restraint" (p.18). Unfortunately, both Smith and Malthus fail to recognize the empowerment of women as another way to slow growth. Malthus writes about the "preventative vices" of birth control (p.19) and prostitution (p.17), and the negative impacts of both on society, including the "tendency to degrade the female character"

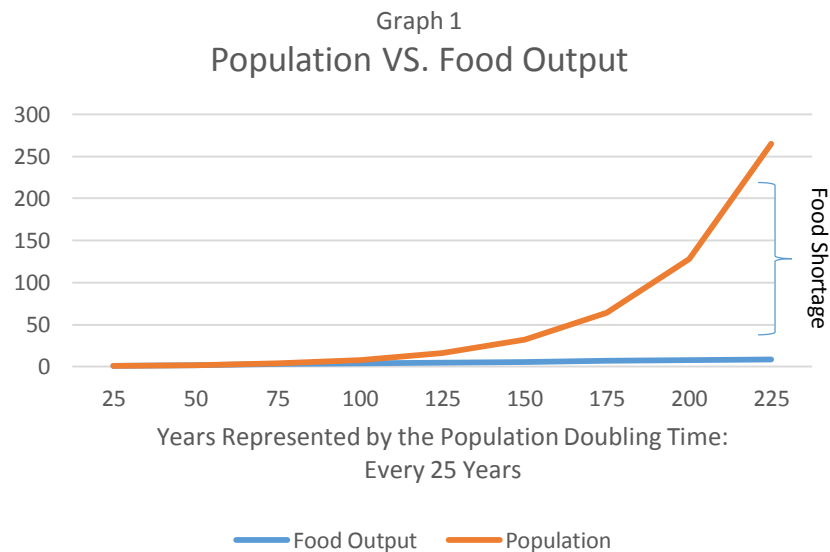
(p.17). It would have been uncommon for their time, however, not completely out of the question, for a moral philosopher or man of the cloth to imagine a world where both family planning and improved conditions for women could coexist. According to the Population Reference Bureau, “Women's access to education, health care, family planning, and employment all affect family size” (Human Population: Women, 2016). Evidence of this can be seen when comparing current population trends in developed and developing countries. In developed nations, where women have far more reproductive and socio-economic rights, the rate of population growth is greatly decreased. Even though both Smith and Malthus recognized that delaying marriage is one way to have fewer children, they failed to see how giving women the right to make choices in all areas of their lives, including marriage and reproduction, would have a powerful impact on growth trends.

After explaining the cause of population growth, both authors describe the short-term economic effects. Smith believed that an increase in population would increase the labor force but not the wage fund, which would result in wages below subsistence (p.97). Malthus diverges from Smith considerably by identifying the cause of misery in the short run as the shortage of supply rather than the surplus of labor. In other words, an increase in population increases demand, increased demand raises prices due to scarcity, and high prices rather than low wages are to blame for lack of subsistence. Malthus made this argument in the context of ending the “Poor Laws” of the time. He explains that when the lowest class has more money to spend, it increases the demand for meat. However, the supply of meat is scarce or limited. Therefore, the increase in demand without an increase in supply results in increases in the price for meat (p.148). Malthus reasons that no matter how much money is given to the poor, or how high their wages are, because of the scarcity of resources, those who can afford to pay more will always

have more than those with less purchasing power (p.151). In other words, there will always be a class structure and the poor will always exist. This was Malthus’ prediction for both the short run and the long run, with things only getting worse as population grows larger and resources grow even more scarce.

Malthus is best known for his theory that population increases faster than subsistence, which leads to scarcity especially in agricultural production. He explains that human population increases geometrically, while food production only increases arithmetically. He provides these numbers to explain this concept: “the human species would increase as the numbers 1, 2, 4, 8, 16, 32, 64, 128, 256, and subsistence as 1, 2, 3, 4, 5, 6, 7, 8, 9” (p.13). This leads to, in a relatively short period of time, a ratio of population to subsistence of 256:9 (See graph 1).

Malthus refers to this scarcity as the “ultimate check” that will limit population growth (p.14). The “misery” of starvation will be the result of the diminishing returns on land use with increasing amounts of labor input (p.8), otherwise known as the law of diminishing returns. Malthus further writes how the law of diminishing returns explains why food production can only increase arithmetically and eventually will reach a maximum output. He writes that first, there is a finite amount of land on the planet (p.8). Man not only needs land for food production, but also for other forms of subsistence like housing. Second, the fertility of land is not equal. So, the most



fertile land will be used first, but as the demand for food grows, less and less productive land will have to be used (p.8). It is easy to see that even with additional labor, land that is less fertile will ultimately produce fewer crops than land that is more fertile. If that were not enough, overuse can cause fertile land to become less productive as the soil is depleted. When these principles are combined, the eventual shortage of fertile land is even further complicated by the demand for land for other uses. So, it is clear that Malthus sees population growth as moving mankind closer to the inevitable inability to provide subsistence due to the natural limits of land.

Conversely, Smith has a much different view of the long-run effects of population growth. He and Malthus agree that in the short run population growth creates misery through the inability to obtain subsistence. Malthus sees this as being due to natural limits which are the result of the scarcity of natural resources. However, Smith identifies the problem as the decrease in wages below the level needed to afford subsistence. The scarcity described by Malthus only gets worse long term, however, Smith's belief in an autonomous self-correcting market allows for a much more optimistic prediction of long-run conditions. Smith writes that it is supply that creates demand¹ (p.276). Therefore, the economy will eventually be driven back into a state of equilibrium over time, as demand increases in response to the extra supply, which is the result of extra workers. Smith sees population growth as a good thing in the long run because he believes strongly that growth is responsible for economic prosperity (pp.87-8). He also believes that population growth causes increasing returns to scale through the division of labor. In order to understand this perspective, understanding his view on the division of labor is key.

Smith devotes three chapters of *Wealth of Nations* to the explanation of the division of labor. He begins with a thorough description of the pinmaking process, and how dividing the operations needed to complete the manufacturing process increases individual production from

¹ Later this will come to be known as Say's Law as Jean-Baptiste Say further developed this theory.

fewer than 20 to the equivalent of 4,800 pins per worker per day (p.15). He attributes this massive increase in productivity to three things: first, “increased dexterity”; second, saving the time normally lost in transition from one job to another; and third, the invention of machinery that allows “one man to do the work of many”, which can be considered more broadly as innovations which improve productivity (p.17). Ultimately, this results in being able to produce more output with the same inputs of both labor and capital through efficiency. Smith does not acknowledge the types of natural limits that Malthus focuses on. It may seem counter-intuitive to say that increased division of labor can work beside population growth to create enough jobs to produce a market in equilibrium. However, when Say’s Law, or the theory that supply creates demand, is combined with the theory that greater output can be achieved from the same inputs, we can begin to see how Smith theorizes, even though he never explicitly states, that efficiency and innovation can increase the carrying capacity of Earth.

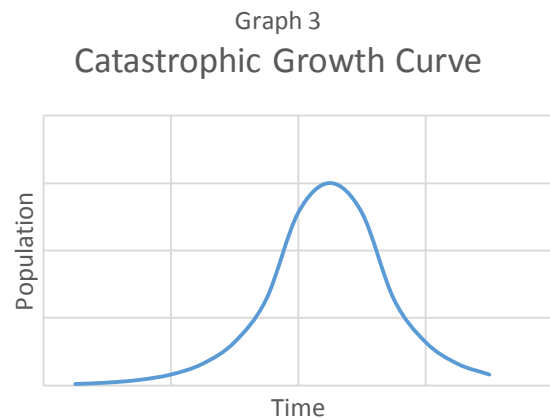
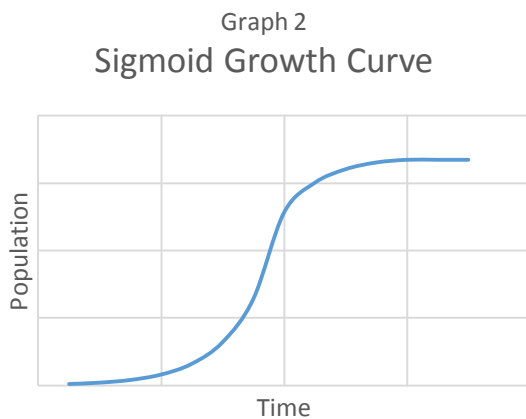
Smith’s theory plays out like this: First, increases in population lead to increased labor. Next, the increased number of laborers provide the means to increase the division of labor, which translates into greater efficiency. Over time, increased labor and efficiency leads to not only an increase in supply but a proportionally larger increase in output per unit of input. This explains both the growth of the economy and the expansion of the carrying capacity of Earth. This increase in supply also leads to an increase in demand for goods. Eventually, a greater demand for goods will lead to a greater demand for labor and a greater wage fund to pay higher or more wages. It is useful to interject that Smith also identified the cyclical nature of the economy. Continuing the trajectory above, higher wages will lead to population growth, which will bring us back to where we began as an increase in population leads to an increase in labor. To summarize all of this into one sentence, Smith saw struggling to achieve subsistence as a short-

term problem that would resolve itself in the long run thanks to increases in efficiency achieved through the division of labor and the potential of the market for economic growth.

It is important to note that although Smith sees the increase in population leading to economic growth through greater division of labor, he does not see the living conditions of the workers improving over time. The cycle explained above can also be used to explain the changes in wages over the long run. When there is a surplus of workers, wages will fall, and life will become very difficult for the working class. This will lead to fewer children surviving and the eventual reduction of the labor force. The shortage of workers will cause wages to rise. As identified before, this will lead to better living conditions and more children. Although there are fluctuations in wages, in the long run wages tend towards the equilibrium of subsistence (p.89). Even though some laborers benefit from easier work resulting from improvements that are made possible through the division of labor (pp.19-20) and temporarily higher wages at times, aggregate real wages² do not improve. In addition, the division of labor also potentially creates a new social problem. In explaining the need for public education, Smith writes that the result of a man doing only one task over and over can be a man “as stupid and ignorant as it is possible for a human creature to become” (p.782). Smith recognized that in the “early and rude” state, people had to perform many different tasks that would keep their minds engaged. As the division of labor increases, the number and variety of tasks that each worker performs decreases. This creates the need to intentionally stimulate their minds through education in order to avoid falling into “drowsy stupidity” (p.783). However, even with these concerns, Smith still believes that without growth, which is aided by the division of labor, the working class will be much worse off.

² Real wages are money wages divided by the price level, or the purchasing power of money wages.

In contrast, the long-run doomsday scenario foreseen by Malthus causes him to spend a considerable amount of time explaining what the result of unchecked population growth will be, and how this misery can be avoided. The solution that he believes will be in man's best interest is the preventative check that he refers to as "moral restraint", which is the voluntary delaying of marriage, and other forms of sexual contact, in order to reduce the number of children conceived (p.17). As mentioned before, Malthus writes that man is "impelled" by a "powerful instinct" to "increase his species" (p.4). He also acknowledges that asking men to delay marriage will result in certain "vices" (p.19). While these vices are undesirable in many ways, they are still preferred to the positive checks which "arise unavoidably from the laws of nature" (p.19). Malthus hopes that people will use restraint to cause population growth to slow and then level off as is illustrated in graph 2. Ecologists refer to this as a sigmoid growth curve (Molles, 2016, p.246). This means that there is geometric or exponential growth in the early stages, followed by a slower rate of growth as the carrying capacity is reached. Once at capacity, growth stabilizes and equilibrium is achieved as long as reproduction remains at replacement. However, if people



ignore his warnings, Malthus foresees the catastrophic results illustrated in graph 3. This graph shows geometric growth until carrying capacity is reached or even exceeded slightly. Then there

is a catastrophic event which greatly reduces population, potentially to the point of extinction.

Both of these growth curves exist in reality, however, most populations of both plants and animals in nature follow the sigmoid growth curve (p.246). This was also recognized by Malthus (p.3). Even though the aggregate human population continues to grow, in specific countries like Sweden growth rates have leveled off, and in some countries, like Hungary, negative growth or declines in population are taking place (Molles, p.254). Malthus predicts that a lack of subsistence due to diminishing returns on land will be the catastrophe that reduces the population, or as he calls it “the ultimate [positive] check” (p.14). However, today’s climate specialists warn that if humans continue to release current amounts of carbon dioxide into the atmosphere, the global climate will increase to the point of catastrophe (Molles, pp.507-8). This would ultimately result in a human population growth curve like the one in graph 3, although, not from the limitations of land like Malthus predicts. Smith and Malthus both recognize that things cannot remain out of equilibrium forever. However, while Smith sees economic growth causing a desirable result as equilibrium is achieved in the long run, Malthus sees just two possible long-run outcomes. Both of these outcomes are the result of the laws of nature which cannot be entirely circumvented through innovation. Malthus predicts that either man will make different choices that result in a sustainable equilibrium, or nature will use the positive check of catastrophe to force man back into a sustainable level of population, or even worse, extinction.

Even though Smith does not see population control as necessary in the long run, he does see how delaying marriage is easier on workers in the short term. We have already established that Smith acknowledges the difficulties faced by the poor, specifically when it comes to providing for their children. However, when he writes about the cause and effect of delaying marriage he does so in the context of an observation rather than a recommendation. He writes

that poverty, or low wages, discourages marriage, however it does not prevent it (p.96). At the same time, Smith observes that “the liberal reward of labor encourages marriage” (p.565). As seen earlier, he also goes into great detail on how changes in the market create a cycle of increases and decreases in supply and demand with the ultimate long-term trend being growth (p.98). Smith even establishes that there are three stages in the “demand for men”. The first is “rapidly progressive”, the second is “slow and gradual”, and the third is “altogether stationary” (p.98). This pattern of economic development is very similar to the sigmoid growth model. Even though the growth model recommended by Malthus is based on the carrying capacity of nature, the same growth model is observed by Smith when comparing the economies of North America, Europe, and China (p.98). According to the observations of Smith, it is not the carrying capacity but rather the oscillations of the demand for labor which can be used to inform people on how many children are currently needed by the market to continue growth while mitigating suffering. Smith sees this as happening autonomously through the changes in wages even when men do not make conscious reproductive decisions based on market observations. However, the choice to marry later and have fewer children, especially when an economy is in the third stage of labor demand, would definitely cause less suffering.

There is evidence that people make reproductive decisions based on both Smith’s observations and Malthus’ predictions. According to *The Economist*, “[choosing to not have children] is partly because... work represents economic necessity” and “many women are forced to choose between motherhood and careers” (Female Power, 2009). Some individuals choose to focus on careers rather than parenthood. For some, having a better quality of life for themselves is reason enough to avoid the cost of children. For others, the reality of economic instability raises enough doubts about their ability to provide for children, that couples choose to forgo this

option (Linn, 2013). This thinking follows the example of Smith in making observations about the state of the economy, then taking it one step further and using those observations to make rational choices about reproduction. Other individuals choose to forgo parenthood because of concerns about environmental limitations. Meghan Kallman reveals that “when she imagines raising a child...she can't help but envision the nightmare scenarios that have dogged her since she first heard the term ‘global warming’ in elementary school”. Enough people have concerns similar to Kallman’s, that it caused her to create the nonprofit organizations Conceivable Future. Conceivable Future is “founded on the notion that the climate crisis is a reproductive crisis” (Ludden, 2016). Malthus would be thrilled that individuals are beginning to see the voluntary reduction of reproduction as a responsible and rational choice. However, the ability to restrain their “powerful instinct” to “increase [their] species” (p. 4), may cause him to rethink that part of his theory.

A comparison of Smith and Malthus would not be complete without addressing the contrasting perspectives that each has about the moral condition of men and society. Campbell and Skinner added a 60-page introduction to their reprint of Smith’s *Wealth of Nations*, which contains several quotes from Smith’s *Theory of Moral Sentiments*. As a moral philosopher, Smith has a very distinct lens through which he views society. He believes that people are inherently good. As a rule, men see others as good and want to be seen as good by others. Smith explains that even when acting in their own self-interest, people are careful to judge their behavior based on both “direct and indirect sympathy” (p.7). This means that when making choices people consider not only their own experience, but also how their actions will affect others. It is surprising that after all of the misery that Smith witnessed, he continued to be committed to this belief. Reading *The Wealth of Nations* through this lens allows the reader to

better understand Smith's optimism. However, if men truly made decisions with others in mind, many of the evils in the world could not exist. Smith seems to make contradictory statements when talking about how specialization and trade improves everyone's condition (p.22), while acknowledging that the wages of laborers, who make up the largest portion of society, tend towards subsistence in the long run (p.89). If people were truly sympathetic as Smith suggests, wouldn't there be a more equitable distribution of wealth throughout the class structure of society?

Malthus has the exact opposite view of society. Unlike Smith's world, where evils should be mitigated through sympathy, Malthus sees a world full of necessary evils and inevitable misery. He contradicts his convictions as a man of the cloth, by instructing men against "an early attachment to one woman" (p.5), knowing that this will lead to the "vice" that has been described above. Perhaps it is his pessimism which prevents him from seeing any other alternatives. Malthus is very clear that there are only three options for the future of humanity: moral restraint, preventative checks brought about by vice, and positive checks due to either vice or natural limits, but always resulting in misery (pp.27-8). He failed to see the use of incentivizing desired behavior and penalizing undesired behavior, as was seen in China's one child policy. These types of policies when combined with improved conditions for women. could have decreased the amount of vice that was seen in Malthus' evaluation. Additionally, Malthus also underestimated man's ability to create technology, which has expanded Earth's carrying capacity far beyond anything that he predicted. Perhaps if his outlook had been less pessimistic he would have been able to imagine a world much closer to the one we currently live in.

As of today, Smith's predictions have been correct, while Malthus' lack of foresight in the area of technology has at least postponed the outcome that he foresaw. Perhaps this is an

unfair analysis, as Malthus provides an end-game prediction, while Smith does not. It is possible that Smith was so optimistic that he believed there is no end to human ingenuity and therefore our ability to overcome anything. However, humans have seen great misery and vice as the result of environmental degradation and exponential increases in population across the world, which both Smith and Malthus acknowledged in their own way. Even hundreds of years later, people continue to discuss many of the topics that both Smith and Malthus wrote about. In addition to the issues that they explicitly address, their overall perspective can also provide a tale of caution. Mankind cannot get so caught up in individual ideology that the interpretation of current conditions becomes skewed, or such a dismal view of the future that the ability to create solutions becomes impaired. Hopefully, Smith's optimistic predictions will continue to prove true and we will continue to discuss the condition of man, human population dynamics and their effects on economic conditions well into the future.

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