

A Malthusian Study of 20<sup>th</sup> Century Korean Economic Development

While there exists substantial literature regarding the application of Malthus's economic model to European countries prior to and following the Industrial Revolution, little effort has been spent applying the model to Europe's neighbors in the east. South Korea in particular seems to be a compelling subject, insofar as its meteoric rise to economic power in the 20<sup>th</sup> century remains largely unprecedented and a fairly complete data set exists for many of its economic indicators. Dubbed the "Miracle on the Han River" by some economists,<sup>i</sup> South Korea's recent history has seen the country's per capita national income increase 80-fold from US \$125 in 1966 to over US \$10,000 in 1995.<sup>ii</sup> Like Europe prior to the Industrial Revolution, Korea prior to the Korean War followed the Malthusian economic hypothesis of rising populations preventing sustained increases in standards of living. Statistics from the post-Korean War era up to the present day, however, indicate that South Korea (hereinafter as Korea) has since broken free of the Malthusian trap, thanks in large part to a series of government-endorsed economic development plans and also to cultural shifts like the rise in family planning.

Writing at the turn of the 19<sup>th</sup> century, Thomas Robert Malthus espoused a pessimistic theory that man will never break free of living at the level of subsistence. This theory derived its substance from two basic postulates. First, that man cannot exist without food to nourish his body, and secondly, that man and woman will forever, by nature of their creation, be aroused by the passions that inevitably lead to procreation.<sup>iii</sup> Malthus further observed that an unchecked population may grow at a geometric rate, while the supply of food upon which that population must survive can at best grow arithmetically. Thus, the faster growth rate of population will be

tempered by the more moderate growth rate of its food supply. To explain this interaction, Malthus identified two types of checks that control population expansion. Preventive checks such as family planning place voluntary limitations on population growth, while positive checks reduce the population to a sustainable level by way of hardships like diseases, famines, and wars. Both types of checks play a role in Korea's economic expansion in the 20<sup>th</sup> century.

Prior to continuing its analysis, this paper must make one important clarification. While Malthus's exact thesis refers to food supply per capita as the limiting factor to population expansion, this study replaces that statistic with income per capita and GDP per capita. This is done primarily because more complete figures exist for these metrics. Admittedly, the use of food supply per capita data would prove more appropriate for this study. However, since food production worldwide currently outstrips population growth, the limiting factor to population expansion is not simply the food supply, but rather access to that food supply, which is directly related to measures of wealth like income per capita and GDP per capita.

Empirical data prior to the Korean War follows closely the expected cycle of an economy stuck in the Malthusian Trap. Figure 1 below shows an increase in the infant mortality rate in the years leading up to the Korean War.

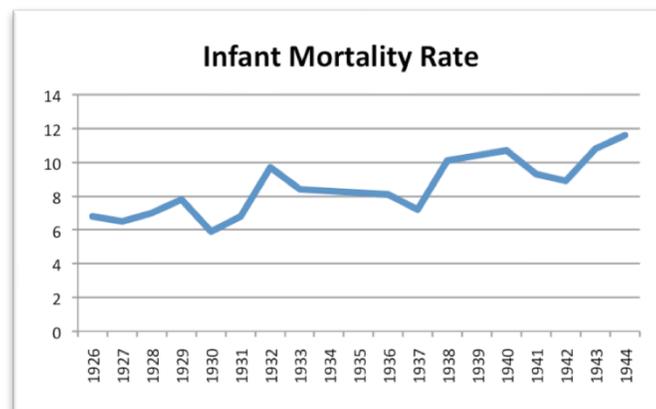


Figure 1, Infant Mortality Rate in Korea from 1926-1944, (per 1000 live births)<sup>iv</sup>

In the Malthusian model, an increase in mortality will result in an increase in average income as the supply for jobs decreases. This increase in average income will in turn affect an increase in population as a greater number of people can now be supported. These interactions are indeed reflected in the data presented in Figures 2 and 3 below.

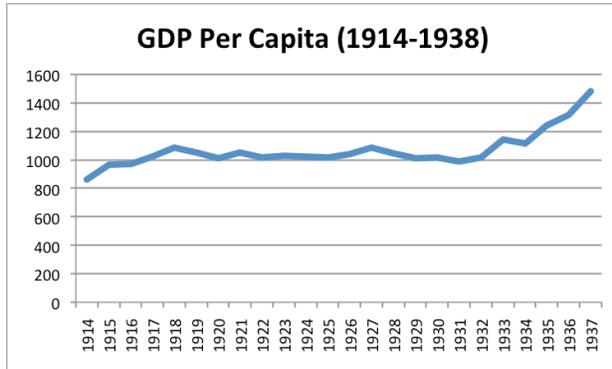


Figure 2, GDP per Capita (1914-1937) in 1990 international Geary-Khamis Dollars<sup>v</sup>

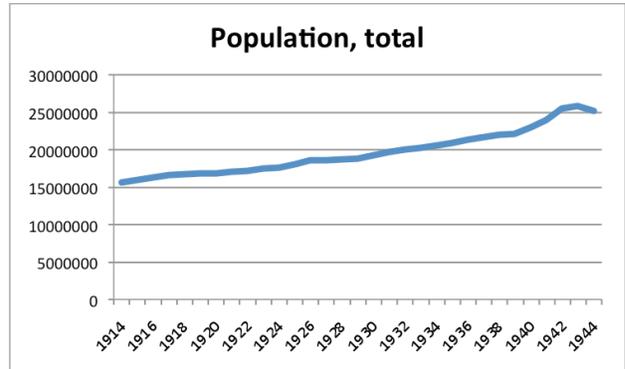


Figure 3, Population of Korea (1914-1944)<sup>vi</sup>

The Malthusian model then predicts a decrease in average income as the rising population increases the supply for jobs, followed by the return to a population level that this lower average income can sustain. Again, these predictions are realized in the empirical data presented below in Figures 4 and 5.

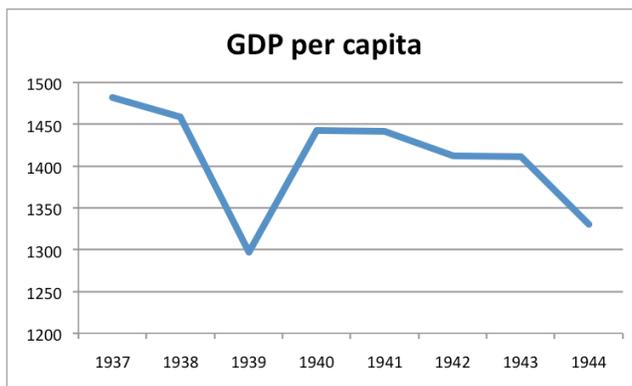


Figure 4, GDP per Capita (1937-1944) in 1990 international Geary-Khamis Dollars<sup>vii</sup>

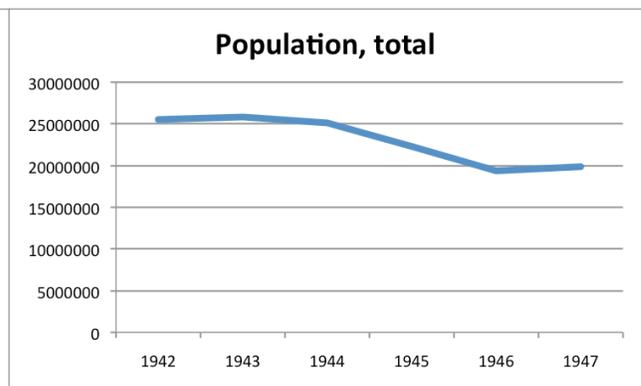


Figure 5, Population of Korea (1942-1947)<sup>viii</sup>

While pre-Korean War data suggest that Korea followed the Malthusian model, similar statistics following the Korean War indicate a departure from the model. As illustrated in Figures

6 and 7 below, agricultural yields increased and eventually produced an increase in living standards, which is to be expected based on Malthus's theories.

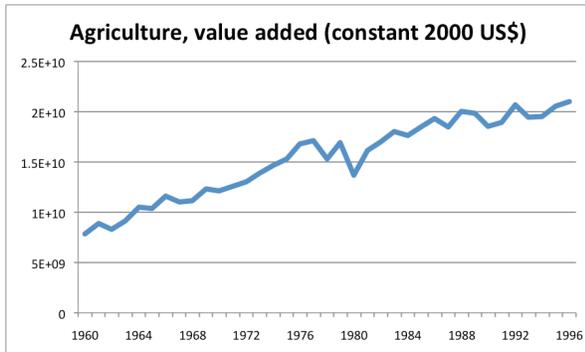


Figure 6, Agriculture, value added from (constant 2000 US\$) (1960-1996)<sup>ix</sup>

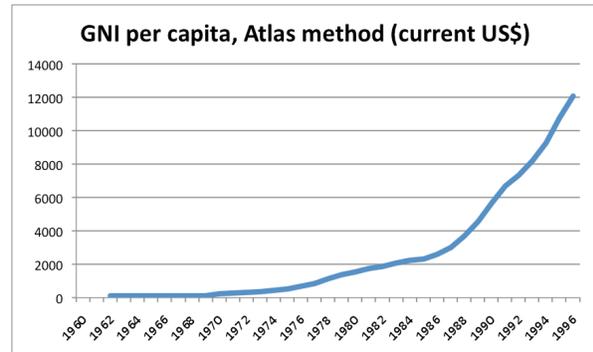


Figure 7, Gross National Income per Capita, Atlas method (current US\$) (1960-1996)<sup>x</sup>

Given an increase in living standards, Malthus would have predicted a spike in the population, but instead Korea's fertility rate dropped, as shown in Figure 8.

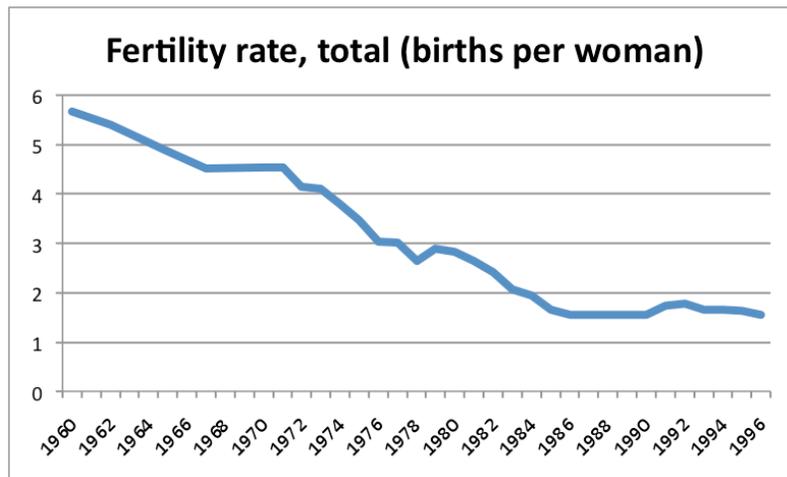


Figure 8, Fertility rate, total (births per woman) (1960-1996)

This extended trend of a dropping fertility rate coincides with a deliberate government plan to slow population growth. In the 1970s, the government began instituting lower tax rates for smaller families, giving higher priority for public housing to smaller families, and also offering cash payments to parents who received vasectomies or tubal ligations.<sup>xi</sup> The Korean government's efforts appear to have been largely successful, as the fertility rate experienced a

steep drop-off in the years thereafter. On the other hand, some researchers have put forth reasons to explain why fertility might decrease in a modern country regardless of government incentives.

Becker, Kevin M. Murphy and Robert F. Tamura explain:

“Malthus’s analysis is not suited to the modern era, as it ignores the importance of education and the higher cost of raising children in industrialized countries, a result of the higher value of time in such countries. These two factors induce parents in rich countries to invest in their children’s quality rather than in their quantity, which can account for lower fertility rates than the ones suggested by Malthus.”<sup>xii</sup>

This theory is certainly a plausible explanation for the decrease in fertility rate. The Korean education system during the late 1970s and early 1980s was strengthened by a swift and sizeable increase in government spending. In 1975, education accounted for 13.9 percent of total government expenditure and by 1986 that figure had increased to 27.3 percent.<sup>xiii</sup> Additionally, it became more expensive (and socially praiseworthy) to send one’s children to the best schools available. As children became a larger investment, parents understood that they could not afford to have as many, and so the fertility rate declined.

During the following decade, the advancement of political democracy in Korea lifted many of the restrictions over union activities that had previously held wages at lower levels.<sup>xiv</sup> Wages increased in earnest near the close of the 1980s, and with a population that was growing at a slower rate due to decreasing fertility, there were no Malthusian forces pushing wages back down to subsistence levels. The Korean government also introduced incentives in the form of import allowances and subsidies that would encourage companies to react to unit labor cost increases by investing in ways to increase productivity. The resulting inventions of new technologies and methods helped to further advance the state of Korea’s manufacturing industry and were crucial to the country’s economic success later in the 20<sup>th</sup> century.

Korea's escape from the Malthusian Trap can be traced back to the steady decrease in fertility rate after the Korean War. During this period, the country's increasingly democratic government allowed unions to more easily secure wage increases, while a more slowly growing population ensured that the Malthusian cycle would not be repeated. Though Korea's economic indicators prior to the Korean War closely resemble the predictions set forth by the Malthusian model, it would seem that this paradigm is ill-equipped to fully explain the sustained growth of modern day Korea.

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<sup>i</sup> Lee, Sang M. "South Korea: From the Land of Morning Calm to ICT Hotbed." *The Academy of Management Executive* 17.2 (2003): 7-18. Print.

<sup>ii</sup> Lee, Joung-Woo. "Income, Consumption, and Poverty." *Social Indicators Research* 62/63.1-3 (2003): 197-209. Print.

<sup>iii</sup> "Modern History Sourcebook: Malthus: Essay on Population 1798." *FORDHAM.EDU*. Web. 04 Oct. 2010. <<http://www.fordham.edu/halsall/mod/1798malthus.html>>.

<sup>iv</sup> Statistical Observations on Death-Rates and Causes of Death In Korea, Chai Bin Park, M.D. School of Public Health, Seoul, Korea; Department of Hygiene and Preventive Medicine, College of Medicine, Seoul National University, Seoul, Korea, May 1954.

<sup>v</sup> The World Economy: Historical Statistics, Angus Maddison, Organization for Economic Co-operation and Development. OECD Publishing, 2003 – Business & Economics

<sup>vi</sup> "SOUTH KOREA : Population Growth of the Whole Country." *Population Statistics: Historical Demography*. Web. 04 Oct. 2010. <<http://www.populstat.info/Asia/skoreac.htm>>.

<sup>vii</sup> The World Economy: Historical Statistics, Angus Maddison, Organization for Economic Co-operation and Development. OECD Publishing, 2003 – Business & Economics

<sup>viii</sup> "SOUTH KOREA : Population Growth of the Whole Country." *Population Statistics: Historical Demography*. Web. 04 Oct. 2010. <<http://www.populstat.info/Asia/skoreac.htm>>.

<sup>ix</sup> "Korea, Rep. of." *The World Bank*. Web. 04 Oct. 2010. <<http://data.worldbank.org/country/korea-republic>>.

<sup>x</sup> "Korea, Rep. of." *The World Bank*. Web. 04 Oct. 2010. <<http://data.worldbank.org/country/korea-republic>>.

<sup>xi</sup> Nam, Duck-Woo, and Kong-Kyun Ro. "Population Research and Population Policy in Korea in the 1970s." *Population and Development Review* 7.4 (1981): 651-69. Print.

<sup>xii</sup> Abramitzky, Ran and Fabio Braggion. "Malthusian and Neo-Malthusian Theories."

<sup>xiii</sup> "South Korea." *Country Studies*. Web. 04 Oct. 2010. <<http://countrystudies.us/south-korea/>>.

<sup>xiv</sup> Choi, Kyungsoo. "Measuring and Explaining Income Inequality in Korea."