Fear of Population Decline

Twenty years ago a monograph entitled, *Fear of Population Decline* sketched the broad features of politics and public policy surrounding the fear of a declining population. Low fertility seems so natural and common in our society. Yet below replacement rates is truly the historical exception. Since Biblical times and before governments advocated pro–natalist attitudes and policies. From the “Be Fruitful and multiply” to “Heroic Mothers” of the Soviet Union who had large families. Mothers were eligible to receive commendations “Glory of Motherhood” and “Medal of Maternity” depending how many children they had.

We don’t have to look very far to understand why: until the Industrial Revolution the rate of population growth was miniscule (as discussed at the beginning of the class), fractions of a per cent per annum. There were large swings around the near–zero trend line, as epidemics such as the bubonic plague wiped out large fractions of the population. (The plague or the great pestilence wiped out one–third to one–half of the population in Europe mid–fourteenth century.) But little secular growth. Indeed just as Malthus wrote at the end of the eighteen century, population growth was about to commence or had just started. Living near the brink of survival in an environment with high [infant] mortality rates required high birth rates to maintain the population. Societies were a couple of bad harvests away from possible extinction.

And as argued in *The Fear of Population Declines* governments advocated high fertility for reasons of national security. Warfare increasingly became one of attrition, where the size of the countries population more than other attributes dictated its military might. Thus, during the second half of the nineteen century, France became fearful as Bismark unified the separate German states to form modern Germany. In 1910, the number of men ages 15-35 6.1 million in France and 10.5 million for Germany. Newspaper editors and pundits advised French women to patriotic, even on their honeymoon (p. 21). But, of course, we understand that population momentum, even if they had listened to these appeals and raised fertility rates, it would be a generation before the number of men of military age would substantially increase. (BTW, they did not listen to the appeals.)

In the late 1930s, the French government pass the “Code du Famile” which offered monetary
subsidies for third and higher parity children. The Nazis invaded and conquered France in 1939, not long after the Code’s enactment and whether it would have been successful we can not determine (as fertility rates in France dropped during the occupation; clearly a difficult time to have a child).

You don’t have to listen that closely to public debates today to hear echos of historical concerns of population decline.

1. The eclipse of elites by the more prolific masses;

2. Concern over “population” of an indigenous population by immigration and/or miscegenation (that is the mixing of the races).

Originally, eugenics was the science of race improvement, where race in this terminology is synonymous with nation, as in the “British race” or the “European race.” In modern terms, consider it the science of the improvement of the genetic stock of the human population. Advocated propagation of individuals and groups deemed to contribute to the well-being of the community as well as restricting the propagation of individuals and groups deemed detrimental.

This was not the lunatic fringe in Europe and the United States at the turn of the twentieth century. The quest for genius or ability lay behind Galton’s work on the transmission of ability over time (from fathers to sons). And along the way he made one of the first applications of regression to social science data.

The presumption by many in the first couple of decades of the twentieth century is that supreme ability occurred in large families. On the reverse, many also believed “feebleness” and pauperism could be hereditary, and thus argued against income support (welfare). Many eugenicists were not opposed to voluntary sterilization of individuals with hereditary diseases. Nazi and their experiments on Jews in the concentration camps gave Eugenics its social approbation that continues to today. Yet, as late as 1933 30 (of 48) States had legislation legalizing the sterilization of the unfit. More than 8,000 people were sterilized in a short time frame 1928-1933 (at the height of the Eugenic movement in the United States).

After two hundred and fifty years of population growth and with many developing countries growing rapidly with fertility rates far above replacement, the notion of no growth and population
decline is foreign. Today in many European countries offer generous (by U.S. standards) income subsidies and subsidized child-related services, with at least a partial hope of raising fertility. (The primary motivation for most of these programs is health related or equity based, to facilitate labor market work by women.)

As a fertility rates drop and a population does replace itself the average age in the population increases. What are the economic consequences of an aging population?

**Economics of Aging**

For example, using information from the United Nations, Weil reports that the median age for the more developed countries (with a population of 1.2 billion in 2005) rose from 29.0 years in 1950 to 37.3 in 2000, and is forecast to rise to 45.5 by 2050. Japan, one of the fast aging countries had 9.3 young people younger than age 20 for every person older than age 65 in 1950. By the year 2025 the ratio is forecast to be 0.59 people younger than 20 for every person older than age 65.

In his analysis, Weil makes great use of the dependency ratio, but with the young and old dependents listed separately. (Note he defines young depends as individuals less than age 20.)

An increase in longevity raises the average age of the population by increasing the number of years each person is old relative to the number of years the person is young. A decline in fertility also increases the average age of the population by reducing the people born recently compared to the past. Of these two forces, it is the decline in **fertility** that is primarily responsible for population aging.

To investigate the economic consequences of population aging, Weil makes great use of the dependency ratio and stable population theory. Population aging has economic consequences whenever some economic interaction brings together people whose participation is a function of their age. For example, a reduction in the ratio of babies to adults will mean more strollers per baby, fewer adults working in stroller production or both. To restore equilibrium in the presence of demographic change requires changes in **prices** or **institutions** (or both).

If people move respond elastically to a change in price the effects of population are minor. He gives the example of shifting adults from the manufacture of baby strollers into the production of wheelchairs.
When responses are not elastic that effects of population aging will be large. He cites old–age pensions, child rearing, and combining old people’s capital with young people’s labor as cases where the change in relative numbers as buyers or sellers will have important effects.

For his analysis, Weil segments the population into the (dependent) young, the productive middle–aged, and the (dependent) old. He assumes people of all ages have the same consumption. And he assumes the output is produced solely by working–age adults, with no other inputs (e.g., capital).

Consumption possibilities are represented in a graph with dependent elderly on the vertical axis and the dependent young on the horizontal axis. He adds a set of iso–dependency lines: along each the total dependency ratio is constant. Iso–dependency lines closer to the origin represent age structures which allow for higher per consumption per capita. (WHY?)

In this space he superimposes a series of points corresponding to the rates of population growth within a stable population. Recall from last time that a stable population is one in which the age–specific fertility and mortality rates have not changed for a long time such that number of people at each age is constant. (He plots the stable population points using the age–specific mortality rates in 2000 for the United States and varies the level of fertility to trace the locus of population growth curve. (Draw Figure 1.)

As seen in Figure 1, a reduction in fertility causes a clockwise rotation along the stable population locus. The youth dependency declines rapidly while the elderly dependency increases slightly at first and raises that of the elderly only with a lag. Ask: Have we seen this before? Answer: Yes, it is the demographic bonus!

The lesson from this analysis of dependency is that, from the point of view of society as a whole, the period of rapid increase in old–age dependency that is in store for the world’s richest countries is to a large extent the passing of the transitory benefit derived from a decrease in fertility. A second lesson is that any change in fertility that will in the long run undo the effects of population aging will, in the short run, lead to an increase (emphasis in original) in total dependency by moving the the point representing the age structure above and to the right of the locus of stable populations. (p.5)
Interestingly, Weil uses the diagram to trace the population path of projected population from 1950 to 2050 for the United States, Japan, and India. The baby boom in the United States is visible. The baby dearth and the increase in the old age dependency are apparent. Most striking is Japan’s rapid increase in old age dependents, several times larger than the United States. And the decline for India and its demographic bonus is transparent from the huge reduction in young dependents and the long delay before an increase in old–age dependents.