AGRICULTURAL ECONOMICS

January 10, 2024

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Cornhusker Economics

Are Too Many or Too Few Babies Being Born?

In 1798, Thomas Malthus published his famous essay on population in which he argued that population tends to grow more rapidly than food production with the result that population growth must constantly be held in check through famine, disasters, or war to keep the number of people in line with the availability of food and other resources. This claim implies that average incomes will always be driven by population growth to a basic subsistence level just adequate for the population to reproduce itself. Based on this result, Malthus argued against the Poor Laws (18th-19th Century British welfare programs) on the grounds that raising the incomes of the poor would just lead to more children and population growth that would drive incomes back down to or below the subsistence level. Malthus's population model also predicts that the population can never grow more rapidly than food production.

This analysis was consistent with the historical record for the centuries before Malthus wrote his essay. The estimates of world population in Table 1 suggest that there was almost no population growth between year 1 of the Common Era and 1000 for the world as a whole. Between 1000 and 1820 population growth picked up but only to an average annual rate of 0.15%. In the years after the essay was published, however, Malthus's understanding turned out to be completely wrong: over the past 200 years, food production has grown more rapidly than population so that per capita food availability is greater today on average than at any time in human history even though the world population is eight times that of 1798 (Peterson, 2009, p. 44). The fact that enough food is produced to feed the world does not mean that hunger and famine have been eliminated everywhere, but the main cause of food shortages in various parts of the world today is war and civil conflict rather than inadequate global food production.

Of course, there have been and are many who worry that even though food production has increased more rapidly than the expanding world population up until the present, there is no guarantee that this will continue to be the case in the future. In the 1960s, widespread worries that a global population explosion would lead to hunger, starvation, and resource depletion swept the planet. In subsequent years, however, worry about population growth subsided despite the fact that population grew rapidly in the second half of the 20th Century (Weiser 2015). The estimates in Table 1 suggest that the average annual population growth rate for the world rose to about 1.79% between 1950 and 2000 compared to a rate of 0.21% between 1000 and 1950. More recently growth rates have fallen to an average of 1.17% for the period 2000 to 2022. Many still believe that population growth needs to be restrained to avoid environmental and climate catastrophes (see "Population Connection" at https://populationconnection.org).

Other concerns about population growth have surfaced in recent years. New York Times columnist Ross Douthat, for example, has been outspoken about the dangers of falling fertility rates and lower population growth. "There are two kinds of people in the world: Those who believe the defining challenge of the 21st century will be climate change, and

those who know that it will be the birth dearth, the population bust, the old age of the world" (Douthat 2023). In many countries, slow or negative population growth rates have led to aging populations as illustrated in Figures 1 and 2. In Ethiopia, where the population has been growing at more than 2.6%, 40% of the population is under 15 years of age with only 3% over 65. In Japan where population growth rates have been negative since 2011, only 15% of the population is less than 15 years old while 30% are over 65. These demographic dynamics mean that in countries like Japan, there will be many more older people relative to the working-age population than in countries where population growth is still robust, and large numbers of young people will soon be added to their workforces.

Table 1:

Year	World	US	China	India	SSA
1 common era	285.00	0.68	59.60	75.00	-
1000	299.50	1.30	59.00	75.00	-
1820	1,033.54	9.98	381.00	209.00	60.00
1900	2,499.00	76.39	400.00	284.50	86.00
1950	2,509.57	152.27	546.82	359.00	181.57
2000	6,144.32	283.16	1,262.65	1,059.63	671.21
2010	6,970.04	309.33	1,337.71	1,240.61	879.80
2022	7,951.15	333.29	1,412.17	1,417.16	1,211.17

Sources: 1CE to 1950, Groningen Growth and Development Center (2023) and US Census (2020); 2000 to 2022, World Bank. SSA stands for Sub-Saharan Africa.

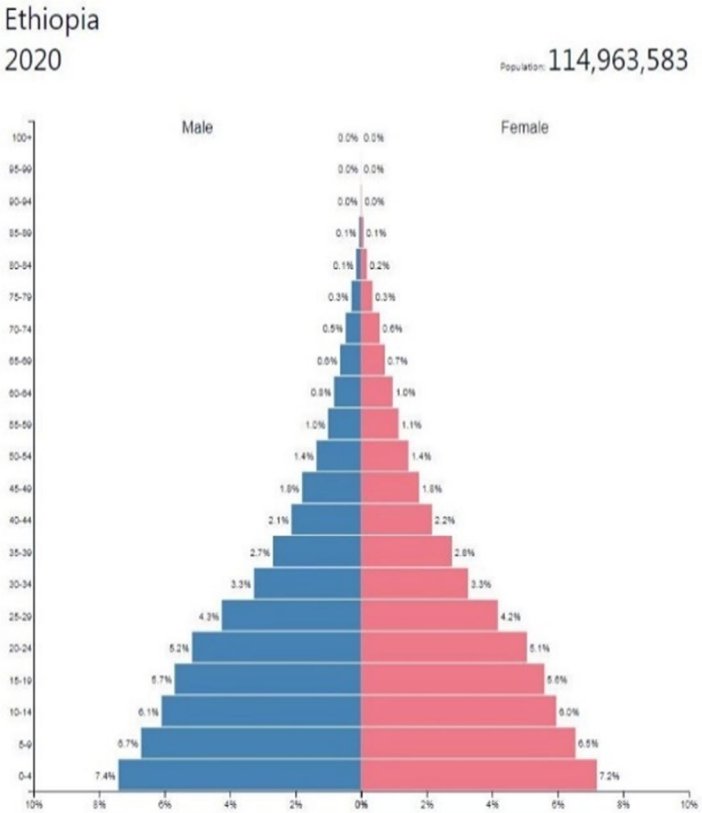

Figure 1: Population Pyramid for Ethiopia, 2020 (PopulationPyramid.net)

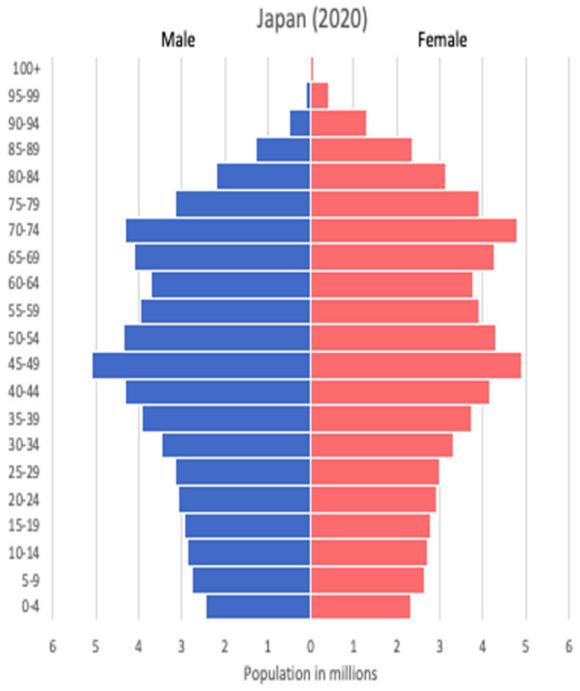

Figure 2: Population Pyramid for Japan, 2020 (worldinmaps.com)

Estimates of population growth and fertility rates for the fifteen most populous countries in the world in 2023 and 2050 are shown in Tables 2 and 3. Demographers consider a fertility rate of about 2.1 to be necessary for the long-term stability of a population. Less than that, the population is destined to decline as seen in China and Japan. By 2050, forecasts indicate that Japan will no longer be among the fifteen most populous countries. Note also that the rankings shift between the two dates, with Nigeria overtaking the United States, and Ethiopia and the Democratic Republic of Congo rising into the top ten. Population growth and fertility rates are falling in many parts of the world with Sub-Saharan Africa the only region continuing to register high growth rates. Seven of the fifteen countries in Table 2 have fertility rates less than 2.1. The data in Tables 1 and 2 translate into an annual world population growth rate for 2023 to 2050 of 0.71%.

The estimates in Table 3 suggest that an additional 1.8 billion people will be added to the world's population by 2050. At the same time, average incomes are likely to rise. Data from the Groningen Growth and Development Center suggest that average real (inflation-adjusted) GDP per capita increased by a factor of fifteen between 1820 and 2018 and World Bank data indicate that real per capita GDP more than tripled over the past 62 years. It is likely that these trends will continue and there will be more people with higher average incomes in the future straining global food systems and natural resources. Slower population growth rates mean less stress on the environment, but they also mean a less dynamic economy with lots of older retired people being supported by relatively small working populations. It does not seem likely that the decline in fertility rates will be reversed despite Mr. Douthat's hopes so the world population will probably be somewhat larger, richer, and older later this century. As noted by Bokat-Lindell (2022), however, "… the prospect of population stagnation or decline isn't any more a cause for alarm than population growth was; it's simply a change that governments will need to manage."

Table 2: Fifteen Most Populous Countries in 2023 Ranked by Population Size.

Country	Population (millions)	Natural population growth rate (%)	Net migration rate (%)	Population growth rate (%)	Total Fertility rate (births per woman)
China	1,413	0.19	-0.01	0.18	1.45
India	1,399	0.69	0.01	0.70	2.07
US	340	0.38	0.30	0.68	1.84
Indonesia	279	0.83	-0.07	0.76	1.99
Pakistan	248	2.01	-0.10	1.91	3.39
Nigeria	231	2.55	-0.02	2.53	4.57
Brazil	219	0.66	-0.02	0.64	1.75
Bangladesh	167	1.20	-0.29	0.91	2.08
Russia	125	-0.62	0.08	-0.54	1.60
Mexico	130	0.69	-0.08	0.61	1.73
Japan	124	-0.48	0.07	-0.41	1.40
Ethiopia	116	2.41	-0.01	2.40	3.92
Philippines	116	1.59	-0.01	1.58	2.77
Egypt	110	1.62	-0.03	1.59	2.76
DR Congo	112	3.19	-0.06	3.13	5.56
World	7,983	0.91	0.00	0.91	2.42*

*Data from International Database, US Census Bureau except for World fertility rate which is from World Bank data for 2019.

Table 2: Fifteen Most Populous Countries in 2050 Ranked by Population Size

2050 Country	Population (millions)	Natural population growth rate (%)	Net migration rate (%)	Population growth rate (%)	Total Fertility rate (births per woman)
India	1,622	0.27	-0.02	0.25	1.75
China	1,362	-0.44	-0.01	-0.45	1.60
Nigeria	428	1.95	-0.03	1.92	3.28
US	389	0.10	0.29	0.39	1.84
Pakistan	367	1.13	-0.07	1.06	1.70
Indonesia	318	0.24	-0.06	0.18	1.72
DR Congo	241	2.45	-0.02	2.43	2.54
Brazil	238	0.05	-0.02	0.03	1.72
Ethiopia	196	1.49	-0.01	1.48	2.49
Bangladesh	194	0.47	-0.24	0.23	1.94
Philippines	158	0.87	-0.09	0.78	2.08
Mexico	153	0.29	-0.01	0.28	1.73
Egypt	151	0.95	-0.02	0.93	2.00
Russia	125	-0.62	0.08	-0.54	1.60
Tanzania	124	1.95	0.00	1.95	3.02
World	9,755	0.54	0.00	0.54	2.20*

* Data from International Database, US Census Bureau except for World fertility rate which is from International Monetary Fund estimates.

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