Aging and the Economy: The Japanese Experience

By Maria E. Canon, Marianna Kudlyak and Marisa Reed

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As the population of the world's developed economies grows older, the causal effect of aging on the macroeconomy is bound to land at the top of academic and policy research agendas.

This effect can be seen most clearly through the lens of labor markets. In the U.S., aging features prominently in the debate on causes of the declining labor force participation rate.[1] Also, labor market "fluidity," or the flows of jobs and workers across employers, has decreased partly in response to an aging population.[2] Similarly, the decline in the business startup rate in the U.S. over the past 30 years has been largely attributed to an aging workforce.[3] Some have also questioned whether aging of the population is a cause of the low inflation in the U.S. since the 2007-09 recession.

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Since the average age of Japan's population is older than that of most other developed countries, Japan provides a laboratory for studying the causal effects of aging. In Japan, the ratio of the population older than 64 to the population between 15 and 64 has increased since 1990 at a steady pace, while inflation and output have fallen over the same time.[4] Because of these demographics, a new wave of research papers has emerged on a potential causal effect of aging on the economy.

In this article, we provide an overview of selected works on the effect of aging on inflation in Japan. We then look into whether the Japanese experience provides an expectation for causality between aging and low inflation in the U.S. by reviewing recent cross-country evidence.

Aging and Deflation: Japan's Experience

A population's average age can be shifted upward by two mechanisms: a decline in fertility (which eventually decreases the number of those potentially entering the labor force) and an increase in longevity (which increases the share of older workers in the population). Japan has experienced a marked decline in fertility since 1950-1955, when the fertility rate was 2.75 births per woman; for the past 40 years, the rate has been below two births per woman. (See Figure 1.) Simultaneously, Japan has experienced increases in longevity (see Figure 2), which have produced not only an older population but an older workforce, relative to other advanced economies, as older workers remain healthy and delay retirement. Since Japan has experienced both types of shifts in recent decades, it has a growing population of older workers, as well as a shrinking population of younger workers due to the decrease in fertility. (See Figure 3.)

Economists Mitsuru Katagiri, Hideki Konishi and Kozo Ueda* argued in a recent study that aging of the population, depending on the cause, has contrasting effects on inflation. The authors said that aging is deflationary when caused by an increase in longevity but inflationary when caused by a decline in birth rates. A falling birth rate implies a smaller tax base, which might prompt the government to allow the inflation rate to rise in order to erode its debt and stay solvent. In contrast, increased longevity causes the ranks of pensioners to swell and their political power to increase, leading to tighter monetary policy to prevent inflation from eroding savings. Using a model, the authors concluded that the deflationary effect of higher longevity dominates.

Another study, by economists James Bullard, Carlos Garriga and Christopher Waller, looked at the effect of demographics on the optimal inflation rate. The authors noted that young cohorts, because they have no assets and wages are their main source of income, prefer relatively high inflation. Older workers, instead, work less and depend on the return of their assets; therefore, they prefer low inflation rates. When older cohorts have more influence on redistributive policy, the economy has relatively low inflation.

In a third study, economists Derek Anderson, Dennis Botman and Ben Hunt found that the increased number of pensioners in Japan led to a sell-off of financial assets by retirees, who needed the money to cover expenses. The assets were mostly invested in foreign bonds and stocks. The sell-off, in turn, fueled appreciation of the yen, lowering costs of imports and leading to deflation.

Finally, economists Shigeru Fujita and Ippei Fujiwara looked for a causal link between an aging of the working-age population and inflation. The authors developed a model with human capital depreciation; as workers separate from their jobs, they lose their human capital and become less productive. The authors examined the effect of a decline in fertility. Initially, the increase in the share of older and, thus, more-experienced workers in the labor force led to increased output and inflation. However, as the share of older workers increased, the

decline in fertility eventually reduced the entry into the labor force of younger workers, leading to negative labor force growth. Deflation resulted. When the model was subject to a significant decline in fertility, such as the one experienced in Japan in the early 1970s, the mechanism in the model led to prolonged deflation.

Aging and Deflation: Elsewhere

The U.S. and many other developed countries have seen their populations grow older in recent decades.[5] To get some idea of whether the persistent deflation experienced by Japan is an inevitable outcome for the U.S. as it continues to age, we looked at cross-country evidence.

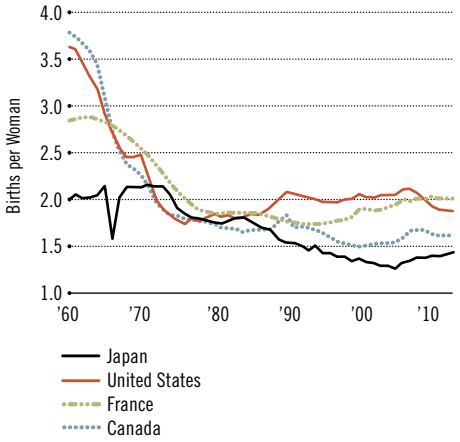
A study from earlier this year by economists Mikael Juselius and Elod Takats examined the relationship between aging and inflation in a panel of 22 advanced economies, spanning 1955-2010. The authors found a stable and significant correlation between the age structure of a population and inflation. However, the correlation contrasts with the Japanese experience. In particular, a larger share of dependents (both young and old) was correlated with higher inflation in that study, while a larger share of the working-age population was correlated with deflation (excess supply and deflationary bias). The authors found that the correlation between inflation and the dependency ratio (young and old populations divided by working-age population) was weakest for Japan, indicating that its experience might not provide a predictive model for other economies.

As the advanced economies age, the effect of aging on the macroeconomy becomes an important topic for academic and policy research. Studying the link between aging and the macroeconomy requires taking into account the decline in fertility, as well as the increase in longevity. Further research is needed to determine the applicability of Japan's experiences to the U.S. economy because of the differences in labor markets, policies and institutions.

Maria E. Canon is an economist at the Federal Reserve Bank of St. Louis. Marianna Kudlyak is an economist at the Federal Reserve Bank of Richmond, and Marisa Reed is a research associate there. For more on Canon's work, see https://research.stlouisfed.org/econ/canon.

FIGURE 1

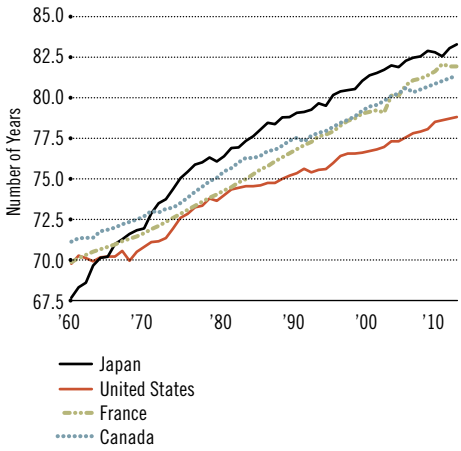
Fertility Rates



SOURCE: Federal Reserve Economic Data (FRED).

FIGURE 2

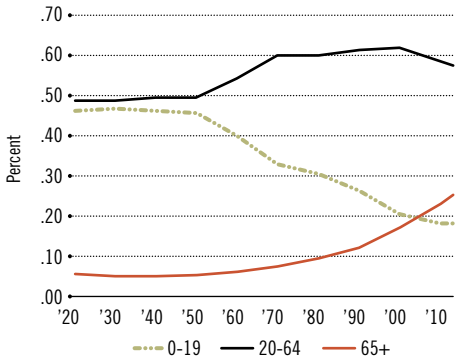
Life Expectancy at Birth



SOURCE: FRED.

FIGURE 3

Population Share in Japan, by Age



SOURCE: Authors' calculations, using data from Statistical Survey Department, Statistics Bureau, Ministry of Internal Affairs and Communications, Japan. See www.stat.go.jp/english/data/nenkan/1431-02.htm.

ENDNOTES

1 See, for example, Canon, Debbaut and Kudlyak.
2 See Davis and Haltiwanger for more detailed data.
3 See Karahan, Pugsley and Sahin for an extensive analysis.
4 See Sánchez and Yurdagul.
5 The fertility rates in the U.S. and Japan have dropped over the past 50 years, and other advanced economies have followed similar patterns. (See, for example, Canada and France in Figure 1.) Like Japan, the U.S. has experienced increases in longevity, albeit somewhat lagging the Japanese experience (Figure 2). In 1960, life expectancy in the U.S. was 69.77 years and was 67.67 in Japan; in 2010, those numbers were 78.74 and 83.33.

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* Correction: The study mentioned in this sentence was initially credited incorrectly to another group of researchers.