

April 19, 2021

What Population Aging Means for Global Inflation and Growth

One key worry for investors these days is whether fiscal stimulus, loose monetary policy, and accelerating economic growth will spark runaway inflation. That concern has been a major factor in driving down fixed income prices and boosting bond yields since the start of the year. However, we've been arguing that any acceleration in consumer prices this year is likely to be fleeting. Much of the expected rise in inflation will simply reflect "base effects" as current prices are compared to the weak prices at the beginning of the coronavirus pandemic one year ago. Despite recent supply chain disruptions, such as the February freeze in Texas and the grounding of the *Ever Given* container ship in the Suez Canal, a lot of excess industrial capacity and unused labor exists in the U.S. and other major countries. The overall high availability of resources should help keep a lid on inflation for some time to come. In this report, we discuss yet another factor that will probably hamper inflation: population aging.

Global Demographic Trends

Readers of a certain age will remember the fears of a global "population bomb" back in the 1960s and 1970s. As we will show here, fast growth in the world's population back then reflected the fact that global death rates declined well before birth rates. Now, birth rates are falling all around the world, slowing the rate of population growth nearly to a trickle and pushing up average ages.

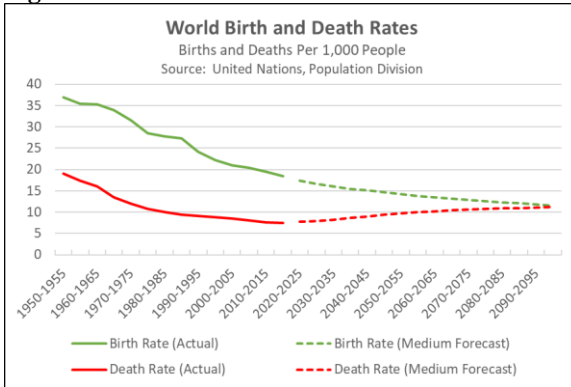
Death Rates. For the last several centuries, and especially since World War II, factors such as improved sanitation and better medical technologies have driven down global death rates. According to the [latest estimates from the UN Population Division](#), the world's "crude death rate" (the number of deaths over a given period divided by the person-years lived in that period) fell from 19.1 deaths per 1,000 people in 1950-1955 to just 7.7 per 1,000 people in 2010-2015, and for the five years ended in 2020 the projection is 7.5. (The projection reflects the UN's "medium" forecast, which lies between its "high" and "low" variants.)

Birth Rates. World birth rates have also changed. Social, cultural, and economic habits initially evolved slowly in the postwar years, and the birth rate fell only slightly. The big drop in the death rate coupled with the continued high birth rates was a key reason for the population growth spurt in the 1960s and 1970s. Finally, however, people did begin to put off having children. The world's "crude birth rate" stood at 36.9 per 1,000 people in 1950-1955, and it was still above 30.0 in 1970-1975. It then started to fall sharply in the 1980s and 1990s, and into the 2000s. The birth rate fell to 19.5 per 1,000 in 2010-2015 and is expected to fall further to 18.5 in the five years ended in 2020 (see Figure 1).

Population Growth. The difference between the world's death rate and its birth rate – currently 11.0 per 1,000 people – approximates the population growth rate. UN estimates show the world's population increased 1.05% in 2020, due to the ongoing decline in birth rates. This is much slower

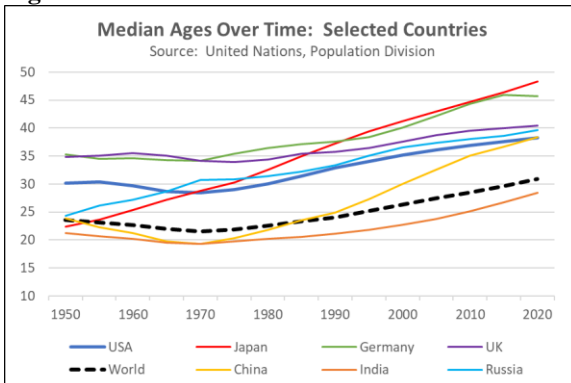
than the average increases of 1.14% over the last 10 years, 1.20% over the last 20 years, and 1.30% over the last 50 years. The UN predicts global population growth will average just 0.93% in the decade ending in 2030, and even less after that.

Figure 1.



Median Ages. Just as important as the slowdown in global population growth, millions of people born during the period of high birth rates after World War II are getting older, even as birth rates are falling. The average age is therefore rising in many countries, and older people are making up a larger and larger share of the population. In the United States, for example, the huge “baby boom” generation born between 1946 and 1964 is now aged 57 to 75. As shown in Figure 2, that has pushed the U.S. median age (the age at which half the population is older and half is younger) to 38.3, compared with 30.2 in 1950.

Figure 2.



Median Age and Inflation

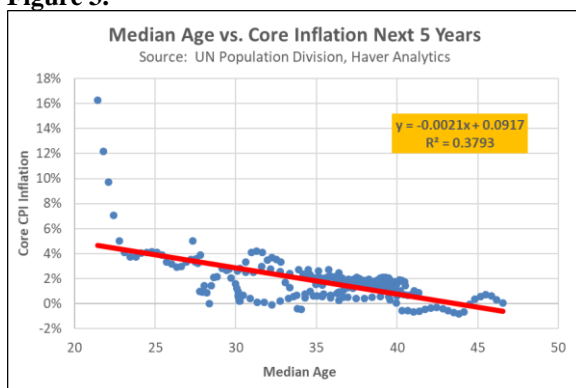
Given current investor worries about inflation and the inexorable progression of population aging across countries, we decided to examine statistically whether there is a relationship between median age and price increases. As it turns out, our study shows that when a country has a higher median age, it tends to have lower inflation in the coming years.

Study Design. Our study looked at the median ages and inflation experience from 1995 to 1996 onward for a sample of 10 major economies, each of which has a relatively comparable measure of “core” consumer inflation (consumer price changes excluding the volatile food and energy categories). Countries in our sample ranged from developed nations like the U.S., Japan, and France to “emerging” or recently developed markets like Mexico, South Korea, and Israel.

Findings. Across our sample, we found that for every additional year of median age, a country’s average annual core inflation rate over the coming five years declined by some 0.2% (see Figure 3). Similar inflation declines were noted for forward periods ranging from one to 15 years. For perspective, the U.S. experienced a one-year rise when its median age increased from 37.3 years in 2013 to 38.3 years in 2020. Sadly, the estimated relationship was not particularly strong, as indicated by the “R²” of just 0.3793 for the five-year forward calculation (R² is a measure of how well the equation fits the relationship; an equation with a strong fit would have an R² of 0.60 or more). The weak relationship probably reflects the fact that many other factors can have a bigger impact on inflation in the near term, such as the base effects, fiscal stimulus, and supply disruptions mentioned above. All the same, we think our study

confirms that population aging across countries is an important background factor inhibiting global inflation over the longer term, much like technological innovation or globalization.

Figure 3.



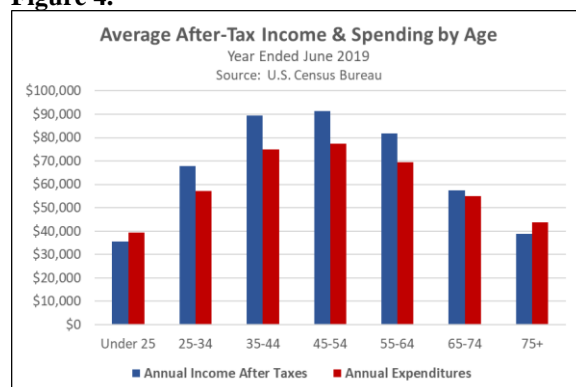
Median Age and Consumer Spending

If a rising median age is associated with less future inflation pressure, it’s logical to wonder by what mechanism population aging affects price formation. Does population aging somehow lead to weaker demand in the economy, which therefore reduces producers’ pricing power? Or does population aging somehow mollify price hikes by increasing supply? Given that personal consumption expenditures (PCE) account for most of the demand in today’s major economies, we decided to study the relationship between median age and “real” PCE growth (i.e., PCE growth after stripping out inflation). As with the first study, we found that rising median ages are associated with slower real PCE growth in the future, suggesting that population aging slows inflation mostly through the mechanism of weaker demand.

Hypothesis. Our hypothesis that population aging would affect PCE stems from our previous analyses showing that people tend to reduce their consumption spending as they approach and then enter retirement. In the U.S., for example, Census Bureau data shows that, on average, personal spending

starts to fall at about age 55 and continues falling through retirement (see Figure 4). Such a fall in spending makes sense, since many people in that age range no longer have children in the house. They also may be more established and comfortable in their social status, so they no longer feel a need to “keep up with the Joneses.” Of course, many of them are also starting to focus on building up their retirement savings.

Figure 4.



Study Design. Fortunately, comparable PCE data is available for many countries. For our second study, we were able to use an expanded sample that included all of the world’s 15 largest economies excluding China (the only top country for which comparable PCE data isn’t available). We also included several additional emerging markets and newly developed countries, for a total sample of 20. Besides the countries in our inflation study, the sample included economies such as Germany, Russia, Brazil, and India. For the sample as a whole and each individual country, we examined the relationship between median age and future real PCE growth in forward periods ranging from one to 15 years.

Findings. As with our inflation study, the data suggested that higher median ages are associated with slower future growth in real PCE, but the relationship was weak. As shown in Figure 5, the calculated R^2 was only 0.1110 for the five-year forward

calculation. We found the weakness of the fit to be puzzling, given that the relationship usually looked stronger for individual countries. Ultimately, we found that the relationship was comfortably strong if we excluded the major commodity producers of Canada, Australia, New Zealand, Mexico, Brazil, and Russia from our sample. As shown in Figure 6, the R^2 for the forward five-year relationship rose to 0.4089 when excluding the “Commodity 6.” While older populations tend to have slower consumer spending growth, it appears the relationship can be offset by the exogenous impact of global commodity markets, probably through their impact on commodity producers’ employment levels, wage rates, consumer optimism, and the like.

Figure 5.

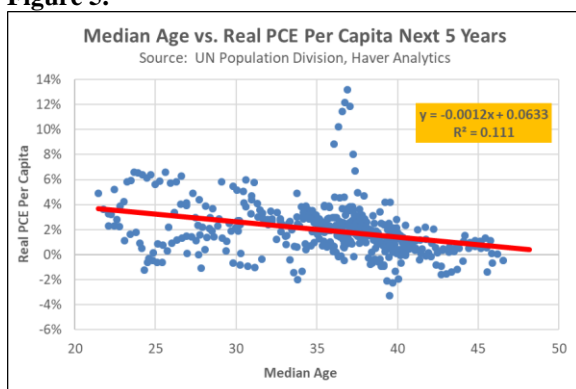
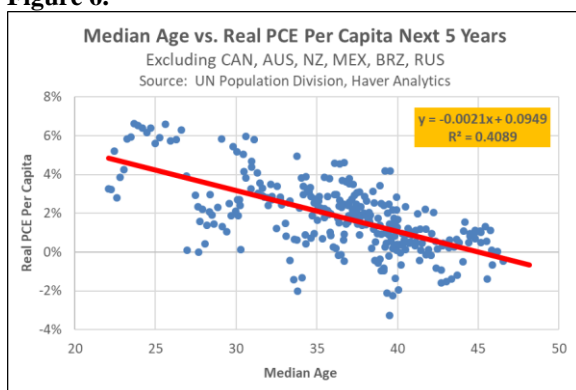


Figure 6.



Ramifications

To summarize, our studies suggest that as median ages rise all over the world (see table below), they will tend to hold down

inflation, consumer spending, overall economic growth, and, especially for rapidly aging countries, geopolitical power. However, the relationship is not conclusive. Plenty of other factors can have an important short-term impact, such as changing productivity, commodity supply disruptions, increased or reduced investment, fiscal stimulus, and loose monetary policy. It’s an exaggeration to say that “demographics is destiny.” Rather, population aging is an important background factor that’s likely to work against inflation and economic growth going forward, but it won’t rule out shorter-term bouts of accelerating price hikes or periods of rapid output increases.

For investors worried about rising inflation, population aging provides an additional reason to think the post-coronavirus inflation spike could be contained and transitory. If so, we think the key ramifications would be as follows:

Fixed Income. If the current inflation rise proves to be contained and transitory, bond prices may hold up better than expected, and yields may not rise too much further. We continue to think the yield on the benchmark 10-year Treasury note could top out at around 2%, not far above current levels.

The Dollar. If population aging and other factors put a lid on inflation and bond yields stabilize near current levels, especially in the U.S., the dollar is likely to stop appreciating and will probably resume the downward trajectory it started in mid-2020.

Commodities. If bond yields top out soon, investors would likely regain their enthusiasm for lower-yielding risk assets such as gold and other commodities, pushing their prices higher, although

population aging is still likely to be a damper on commodities in the longer term.

U.S. Stocks. Indeed, contained inflation and stabilizing bond yields could encourage many investors to again buy lower-yielding stocks, such as those in the Technology sector. However, we still think that loose fiscal and monetary policy coupled with post-pandemic economic reopening will produce the kind of rapid economic growth that provides even greater support to cyclical and small-company stocks.

Foreign Stocks. Finally, if U.S. bond yields stop rising and the dollar starts depreciating again, non-U.S. stocks are likely to benefit. Our past analysis indicates that foreign stocks tend to outperform U.S. stocks when the greenback is weak and falling. In fact,

our analysis here suggests German stocks might bear an especially close look. As shown in the table below, Germany is the only country in our sample that saw its median age decline (slightly) in the five years ended in 2020. That small decline probably reflects the large influx of relatively young Middle Eastern refugees into Germany beginning in 2015. If our analysis here is correct, German companies will not only benefit from the eventual conquering of the pandemic in Europe, but the slight fall in Germany’s median age may give them more pricing power and boost consumer demand.

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Median Age (in Years) Over Time											
Sample Members Shown in BOLD ; Major Commodity Producers Shown in RED											
Source: UN Population Division, 2019											
	1970	1975	1980	1985	1990	1995	2000	2005	2010	2015	2020
Japan	28.78	30.26	32.55	35.00	37.28	39.40	41.20	43.00	44.65	46.35	48.36
Italy	32.81	33.31	34.10	35.51	37.02	38.66	40.32	41.91	43.50	45.36	47.29
Germany	34.17	35.43	36.48	37.17	37.63	38.43	40.07	42.12	44.33	45.90	45.74
Spain	29.82	29.86	30.43	31.62	33.41	35.47	37.62	39.05	39.97	42.49	44.86
Korea	18.98	19.92	22.11	24.33	26.95	29.32	31.87	34.80	37.96	40.78	43.73
Taiwan	18.95	20.85	23.16	24.96	27.51	29.83	31.98	34.55	37.20	39.73	42.46
France	32.37	31.63	32.43	33.57	34.82	36.25	37.66	38.89	40.07	41.25	42.34
Poland	28.08	28.55	29.48	30.71	32.21	33.65	35.00	36.56	38.06	39.73	41.68
Canada	26.06	27.46	29.19	31.05	32.92	34.78	36.79	38.56	39.62	40.40	41.12
UK	34.20	33.96	34.41	35.40	35.78	36.45	37.60	38.72	39.55	40.01	40.47
Thailand	18.01	18.52	19.71	21.77	24.31	26.60	30.17	32.77	35.52	37.86	40.10
Russia	30.76	30.83	31.39	32.17	33.36	35.02	36.50	37.31	37.99	38.65	39.59
China	19.26	20.28	21.86	23.55	24.86	27.35	29.98	32.57	35.03	36.70	38.42
USA	28.41	28.99	30.01	31.44	32.85	34.05	35.19	36.10	36.88	37.57	38.31
Ireland	26.41	26.05	26.25	26.88	28.36	30.11	31.82	33.22	34.42	36.50	38.25
New Zealand	25.63	26.32	27.90	29.52	31.15	32.59	34.34	35.54	36.57	37.27	37.97
Australia	27.36	28.06	29.30	30.69	32.07	33.60	35.39	36.55	36.82	37.22	37.88
Kuwait	18.88	17.78	20.55	22.27	23.53	26.64	27.79	28.20	29.51	33.52	36.78
Uruguay	29.65	30.02	30.15	30.37	30.74	31.12	31.58	32.70	33.89	35.01	35.76
Chile	20.59	21.59	22.88	24.27	25.67	27.05	28.67	30.45	32.19	33.84	35.34
Brazil	18.65	19.45	20.34	21.37	22.58	23.90	25.27	27.09	29.15	31.37	33.48
Vietnam	18.16	18.32	19.07	20.03	21.06	22.27	24.22	26.44	28.54	30.50	32.49
Israel	23.50	24.13	25.00	25.39	25.90	27.28	27.98	28.71	30.11	30.24	30.48
Mexico	16.68	16.87	17.41	18.50	19.67	21.29	22.93	24.66	26.18	27.67	29.17
India	19.32	19.74	20.20	20.61	21.09	21.81	22.71	23.79	25.10	26.77	28.43

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