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Economists assume that people attempt to smooth consumption over time. The data are consistent with this assumption. If you follow a cohort of people over a number of years, you will observe that their income will fluctuate a lot more than does their consumption. Income generally rises sharply early in peoples' careers, peaks out in middle age, declines gracefully toward retirement and then falls off substantially in retirement. Meanwhile, people go into debt when they are young to finance the purchase of education, durable goods (like a car) and a house. Then they begin saving a higher proportion of their income as income grows and they build a portfolio that is used to supplement income in retirement. This income supplement includes income off the portfolio and proceeds of the sale of assets.

If a generation is particularly large, like the baby boom generation, this consumption smoothing can have important effects on financial markets and economic activity. Large generations will tend to bid up the prices of assets during their accumulation years and then push asset prices down as they attempt to liquidate portfolios in later years.

Economists have indeed found strong correlations between demographic measures and economic activity and stock prices. For example, the baby boom spike in birthrates in the 1950s was followed 40 years later by a booming stock market and solid economic growth in the 1980s and 1990s (the 30-40 lag allowed the boomers to grow up to be big spenders and investors). Most early studies along this line have used a simple measure of the age distribution, like the ratio of the number of middle-aged people (40-49 years) to the number of older (>60 years) people (this is called the M/O factor) or the ratio of middle-aged to young (<30) (this is called the M/Y factor). Investigators have found strong positive correlation between the level of stock prices and M/Y or M/O.

One problem with this analysis is that the number of data points is pretty small. Major shifts in birthrate occur only every twenty years or so; therefore we have just a few useful data points over the past 100 years. It is hard to make a convincing argument using such a small sample. But, in an interesting piece recently published in the Financial Analysts Journal[1], investment researchers Robert Arnott and Denis Chaves attempt to address this data weakness by examining data on more than 200 countries. In addition to looking at many countries, Arnott and Chaves attempt to obtain a richer measure of the age distribution than using the simple M/Y or M/O ratios. While they would like to use the full set of age group variables (that is, the percentage of the population aged 20-29, 30-39, etc), they recognize that doing so would not enable precise estimates due to the high degree of correlation between the various age categories. So, they represent the age distribution using a low degree polynomial.

Specifically, Arnott and Chaves run regressions of five-year average growth and returns against measures of initial conditions and the age distribution as represented by a polynomial. The

purpose of using five-year averages is to filter out transitory or so-called "high frequency" effects on growth and returns. The purpose of including a set of initial conditions (current growth for the growth equation, current bond yield for the bond equation and current price earnings ratio for the equity return equation) is to control for the state of the business cycle and current asset valuations.

Results

The major conclusions are consistent with prior research. The most favorable demographics conditions for economic growth are large numbers of people in their 30s and 40s. The most favorable demographic conditions for bond and stock returns are large numbers of people in their 50s. These results suggest that the impact of an aging population is first to slow the rate of economic growth, and subsequently to reduce investment returns.

Based on their regressions, Arnott and Chaves project dismal prospects for economic growth for Japan and much of Europe over the next decade or two. The growth outlook is not so good for the U.S. as well. On the other hand, growth prospects are pretty solid for much of Africa and South America. Likewise, return prospects are poor in Western Europe and Japan and solid in Mexico, South America and Northern Africa.

Caveat

A major caveat is that there are many factors that affect economic growth and investment returns. The researchers attempt to adjust for these by using low frequency data and measures of initial conditions. But still, the results may easily be diluted by left out variable bias. Don't bet the ranch on these results. However, they do support the narrative that investment returns in the U.S. over the intermediate horizon (next ten to twenty years) are likely to be lower than historical returns. This means you have to save more. It also suggests that investors should consider expanding their investment horizon to include emerging markets.

[1]Robert Arnott and Denis Chaves, "Demographic Change, Financial Markets, and the Economy," Financial Analysts Journal, January/February 2012.