

Demographic Change and the Equity Premium

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As in all major industrialized countries, the changing age demographics in the United States are reducing the relative size of the working age population as a fraction of the overall population. The increased scarcity of labor, relative to physical capital, would be expected to increase wages and, at the same time, decrease the rate of return on capital. This result has been illustrated in our previous work. The question addressed in this paper is how this will translate into financial market returns and, more specifically, on the relative return on riskier assets like stocks, as compared with safer assets like government bonds. This differential is typically referred to as the equity premium. Will stocks become relatively more attractive investments or relatively less attractive investments during a period of significant population aging worldwide?

In ongoing work over several years, we have put together an enhanced model of worldwide financial markets, designed to estimate the effects of demographic trends on international capital flows and rates of return, both within countries and globally. Recent extensions of the model provide us with an analytically tractable framework to consistently analyze the causal links between demographic change (aging) and asset returns, accounting for the most important interrelationships that jointly influence macroeconomic markets. A central result of our theoretical analysis in the paper is that the equity premium increases when smaller cohorts enter the labor market, as we expect to be the case over the coming decades. Thus riskier investments like stocks would be expected to elicit comparatively higher returns than safer investments like government bonds.

We follow up our theoretical analysis with simulations designed to quantify these effects. The most recent enhancements to our simulation model incorporate a more rapid periodicity in the model's operational structure. Any serious attempt to quantify the effects of demographic change on asset prices should be based on simulation models with a realistic periodicity of one to at most five years. Models that run at a lower frequency implicitly impose restrictions on a household's ability to adjust their portfolio which may bias the predictions. The periodicity of our model is therefore annual and we calibrate the model to projected demographic trends in the United States in the coming decades. Our framework thereby enables us to provide a realistic quantitative assessment of the effects of aging on the equity premium.

We show that the expected decrease of the risky rate of return to capital until 2030 is in the order of magnitude of about 1.2 percentage points. However, the decrease of the risk-free interest rate on government bonds is slightly higher than that, so that the equity premium increases by about 0.28 percentage points.

The full working paper is available on our website www.nber.org/programs/ag/rrc/books&papers.html as paper NB07-07.

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