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The potential effect of US baby-boom retirees on stock returns☆

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ABSTRACT

Empirical studies demonstrated that US baby boomers consumption and savings patterns have affected economic aggregates over the past decades, among them equity returns. Boomers' retirement is expected to mitigate the demand for equities until 2050, but its impact varies with the specific population age structure along decades. This paper employs a dynamic asset pricing model with optimum consumption and portfolio rules to estimate aging effects on S&P500 returns between 1950 and 2050. Calibration for demographic and economic data between 1950 and 2005 yields model estimates that significantly explain the moving average of S&P500 returns. Further, taking into account the present value of expected demographic effects until 2050 suggests that the S&P500 was fairly priced at the heart of the financial crisis, on April 2009, but overpriced thereafter.

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1. Introduction

Population economists conjecture that disproportional changes in young, prime-age, and old cohorts change the aggregate demand for real assets, financial assets, and consumption, among other economic variables. Young cohorts borrow, primarily in order to acquire real estate, prime-age cohorts are the major savers in the economy, and the old generation consumes its savings. In 2005 post-war baby-boomers started retiring in the USA, Europe, Japan, and other developed countries, raising policy and planning questions such as pension planning, social security, demand for real and financial assets, economic growth, and more (Arnott & Casscells, 2004; Bloom, Canning, & Sevilla, 2002). One of the major issues is asset valuation: upon retirement, a large cohort of baby-boomers will face a smaller pool of buyers as they liquidate real and financial assets. Siegel (1998, p. 41) illustrates this notion by writing: *"The words'Sell? Sell to whom?' might haunt the baby boomers in the next century."* Theoretical models such as in Jagannathan and Kocherlakota (1996), Brooks (2000), Abel (2001), Storesletten, Telmer, and Yaron (2007), Constantinides, Donaldson, and Mehra (2002), Goyal (2004), Cocco, Gomes, and Maenhout (2005), and others predict a significant decline in the prices of real and financial assets. While a few authors hypothesize a "meltdown", this outcome is questionable given empirical estimates, such as in Poterba (2001), which documents little predictability of demographic measures on stock returns. This paper quantifies rational expectations of aging effects on equilibrium equity returns between 2010 and 2050 in a dynamic asset pricing model, accounting for aggregate labor income, optimum consumption, and asset allocation. We substantiate our future model predictions by demonstrating that estimates of past aging effects between 1950 and 2005 significantly explain S&P500 returns. In light of Poterba (2001) and other empirical findings, whereby demographic effects were not priced ex-ante in financial, real estate, and consumer product markets, we further estimate the implications of myopic expectations. We conclude that if the 2002–2007 average Price/Earnings (P/E) ratio indeed did not reflect expected boomers' retirement, it should have declined by 47% to about 14. The 14.14 P/E ratio of early 2009, triggered by the financial crisis, met that level. However, stock prices bounced in late 2009–2010, and because the P/E ratio between 2010 and 6/2014 was measured in the low 20s, we conclude that aging effects were priced only partially as of mid-2014.

Empirical findings on aging effects deserve a closer look. Liu and Spiegel (2011) estimate empirically the S&P500 P/E ratio until 2030, and project a declining price path until 2021, followed by a recovery. While according to their estimates the cumulative S&P500 return between 2010 and 2021 be negative 13%, and by 2030 positive 20% vs. 2010, our predictions are somewhat different. According to our model predictions, the most severe boomer's retirement impact occurs around 2010, with diminishing effects that almost vanish in 2050. In two papers, Poterba (2001, 2004) estimates the theoretical predictions for asset prices' meltdown in real and financial asset markets upon baby-boomers' retirement by analyzing the 1995 and 2001 surveys of consumer finances, respectively. Poterba finds weak support for the historical baby-boomers' effect on equity prices. Projecting the estimates until 2050, Poterba concludes in both papers that baby-boomers' retirement will not impose a significant decline in equity returns between 2020 and 2050, since the demand for equities would be maintained due to bequest motives. This conclusion is consistent with our estimates, though for different reasons. Referring to Poterba, Abel (2001) developed a rational expectations general equilibrium model that accounts for bequest motives and concludes that equity prices boost at prime-age and decline at retirement, even though the model predicts that bequest motives support the demand for equities.

In spite of the availability of relatively reliable demographic predictions, many researchers find that prices adjust to varying demographic states on the run, but not ex-ante, as rational pricing would imply.[1] Lee (2013) finds empirical support for the behavioral life-cycle hypothesis whereby variations in demographic clientele explain long-term dividend yield strategies. DellaVigna and Pollet (2007)

[1] Mankiw and Weil (1989) find that the real estate market responded to contemporaneous changes in the mass of the 25–40 age cohorts. Therefore, baby-boomers' demand for housing in the 1970s and 1980s faced limited supply, resulting in increasing prices. Using postwar US data, Bakshi and Chen (1994) were the first to report that average age increased equity returns through consumption growth rate. Brooks (1998) shows that both stock and bond prices increase with the proportion of prime-age cohorts in developed economies. Bergantino (1998) estimates that about 40% of the increase in housing prices between 1965 and 1980 could be attributed to boomers' increased demand.