

Investing over the Life Cycle: One Size Doesn't Fit All

By *Tim Sablik*

Financial advisers commonly recommend that young individuals invest more heavily in risky assets than safer assets. Because of their long time horizons, young investors can expect that long-run gains on risky assets typically will outweigh short-term losses. However, the Fed's Survey of Consumer Finances shows that young people generally do not follow this advice. Instead, they invest little or nothing in risky assets initially and increase their holdings gradually as they approach retirement. Economists find that accounting for other risks that young people face can help explain this behavior.

The standard life-cycle model used by economists assumes that individuals will take steps to smooth their consumption over their lifetimes. In general, this means investing savings during working years in order to maintain consumption during retirement. In line with this model, financial advisers typically recommend that young investors place most of their savings in risky assets (stocks) rather than safe assets (bonds). Stocks offer higher returns than bonds to compensate for their greater risk of losses, and during the past two centuries, stocks have consistently outperformed bonds.¹ Young investors are particularly well-positioned to take advantage of this "risk premium." Their long time horizons mean that their long-run gains usually will outweigh their short-term losses, and compounding the higher returns on stocks from a young age will result in much greater retirement savings than if they had held only bonds.²

As investors age, advisers suggest they switch to less risky assets to protect themselves against short-term losses as they approach retirement. A common rule of thumb that captures this

investment advice is that individuals should hold a percentage of their savings equal to 100 minus their age in stocks and the rest in bonds.³ So, a 25-year-old would place 75 percent of his or her savings in risky assets, while a 60-year-old would put only 40 percent in risky assets.

Individuals do not seem to follow this advice, however. First, only about a quarter of households age 21 through 25 hold risky assets, according to the Fed's Survey of Consumer Finance. This fraction more than doubles for the 31 through 35 age group and peaks at about two-thirds of households age 51 through 55 before declining again. This creates a "hump-shaped" pattern of stock market participation. (See Figure 1.) Second, households that do hold risky assets tend to increase those holdings gradually over the life cycle rather than decrease them as conventional wisdom would dictate. (See Figure 2.)

Are investors ignoring financial advice to their detriment? Research by a number of economists suggests otherwise. Using more detailed life-cycle models, they find that young investors may

be considering a number of risk factors not captured by simple investment rules of thumb. First, young workers are more prone to the risks of job loss and income fluctuations than older workers, which curbs their appetites for risk. Second, labor earnings and stock market returns may move together with the broader economy. Because young workers expect a larger stream of future earnings than older workers, they are more exposed to the “stock-like” risk of wage fluctuations, making them less likely to take on additional risk by investing in stocks. Finally, young workers also may hold a significant portion of their wealth in illiquid assets, such as housing, reducing their ability to participate in the stock market. Additionally, housing market risk may lower households’ appetites to take on additional risk.

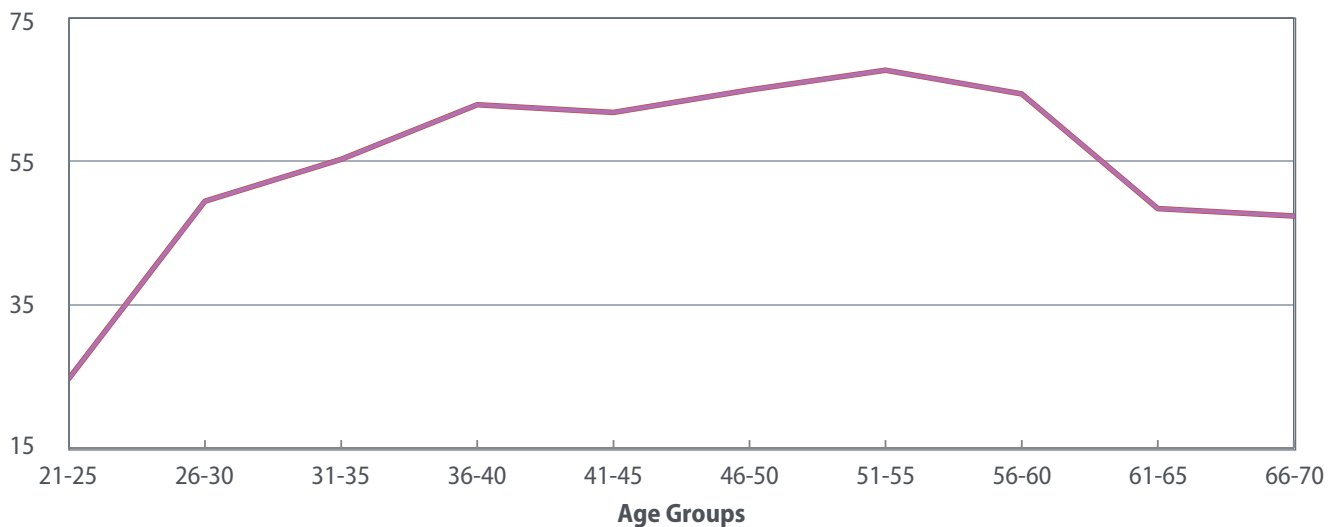
Labor Market Uncertainty

The standard life-cycle model and investment advice both overlook the fact that individuals already may be carrying a large portion of their wealth in the form of risky assets—their jobs. João Cocco and Francisco Gomes of the London Business School and Pascal Maenhout of INSEAD find that ignoring income and job uncertainty when making investment choices would result in losses for individual investors of up to 2 percent of their annual consumption.⁴ After

incorporating the possibility of sudden labor income loss into the life-cycle model, the authors observe a reduction in the optimal share of risky assets, particularly for workers age 20 through 30. This occurs for two reasons. First, the labor income risk curbs investors’ appetite to take on additional risk in the stock market. Second, because it is not possible to fully insure against labor market risk, workers must set aside some savings as insurance against sudden income loss. This effect diminishes as workers build up greater wealth over time—for example, by saving for retirement.

Labor market risks are also higher in general for younger workers. For example, during the last recession, the unemployment rate for individuals age 20 through 24 grew by 6.6 percentage points from 9.4 percent at the outset of the recession to 16 percent at the peak, much higher than for older age groups. Using data from the Current Population Survey, economists have estimated unemployment risk over the life cycle and find that it declines sharply between the ages of 20 and 30. (See Figure 3.)⁵ Additionally, young workers change jobs more frequently than older workers. In the first decade of employment, the average worker goes through seven jobs, or about two-thirds of his or her lifetime total.⁶

Figure 1: Percent of Households Investing in Risky Assets



Source: Calculations by Chang, Hong, and Karabarbounis using data from the 1998 Survey of Consumer Finances. Other authors have examined data from subsequent survey editions and found very similar trends.

Note: Examples of risky assets include stocks, real estate, and corporate bonds. Examples of safe assets include U.S. government bonds, bank deposits, and money market funds.

In a recent working paper, Yongsung Chang of the University of Rochester, Jay Hong of Seoul National University, and Marios Karabarbounis of the Richmond Fed study the effects of these labor market risks on young households.⁷ They develop a life-cycle model that closely approximates the investment behavior observed in the Survey of Consumer Finances data. In their model, uncertainty over future earnings explains much of investors' behavior. Because young workers face higher unemployment risk and a more uncertain career path, they are subject to greater uncertainty about their future earnings potential. This uncertainty declines as they age and settle into careers.

Chang, Hong, and Karabarbounis explain that uncertainty about earnings potential prompts young workers to hold more relatively risk-free assets as a hedge against labor market risk. As this uncertainty dissipates over a worker's lifetime, he or she is more willing to take on greater investment risks.

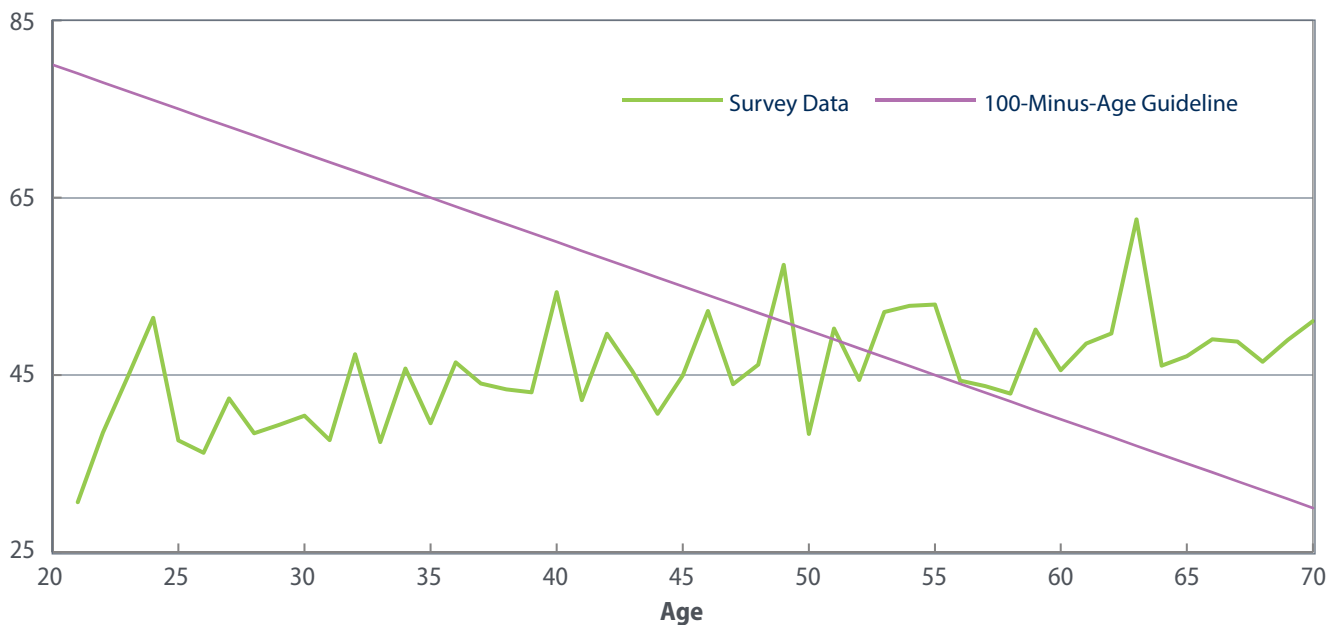
Labor Income's Stock-Like Risk

In their models, Cocco, Gomes, and Maenhout and Chang, Hong, and Karabarbounis assume that the

risks associated with labor income are not correlated with stock market risks. But labor income and stock market returns also may rise and fall together, which would further increase the disincentive young workers have to hold stocks. In a 2007 *Journal of Finance* article, Luca Benzoni of the Chicago Fed, Pierre Collin-Dufresne of the Swiss Finance Institute, and Robert Goldstein of the University of Minnesota argue that over the long run, labor income and stock market returns fluctuate together in response to changes in the overall economy.⁸

The authors note that when workers are young, their wealth primarily consists of their "human capital," which is the knowledge, skills, and abilities that contribute to their earnings potential. In this analysis, young workers' wealth can be thought of as the present value of future income flows. In addition to the labor market risks described in the previous section, Benzoni, Collin-Dufresne, and Goldstein argue that over long time periods, labor income streams and stock market returns have positively correlated risks. For example, periods of economic growth tend to be accompanied by strong stock performance and rising incomes, while economic downturns are often

Figure 2: Risky Assets as a Percent of Total Investment for Households that Hold Risky Assets



Source: Calculations by Chang, Hong, and Karabarbounis using data from the 1998 Survey of Consumer Finances.

Other authors have examined data from subsequent survey editions and found very similar trends.

Note: Examples of risky assets include stocks, real estate, and corporate bonds.

Examples of safe assets include U.S. government bonds, bank deposits, and money market funds.

characterized by falling stock prices and weak labor market conditions. Under these assumptions, labor income acquires “stock-like” risk properties. Since young workers hold most of their wealth in the form of future earnings, the authors argue that young workers essentially are holding a substantial amount of stocks that they cannot divest. To compensate for this risk, young workers invest in safer assets.

As workers age, less of their wealth is tied to future earnings, and so their implicit stock market holdings decline. Additionally, aging workers face a shorter time horizon, which causes the long-run “stock-like” risk of labor income to decrease. Instead, workers’ human capital acquires “bond-like” qualities. These changes prompt older workers to invest a greater fraction of their wealth in stocks. As they approach retirement, the value of their human capital declines as their number of remaining working years diminishes. When this happens, workers again shift their investments from stocks to bonds. Benzoni, Collin-Dufresne, and Goldstein find that a model incorporating these effects mimics the investment patterns observed in the data.

Equity Fixed Costs and Housing Market Risk

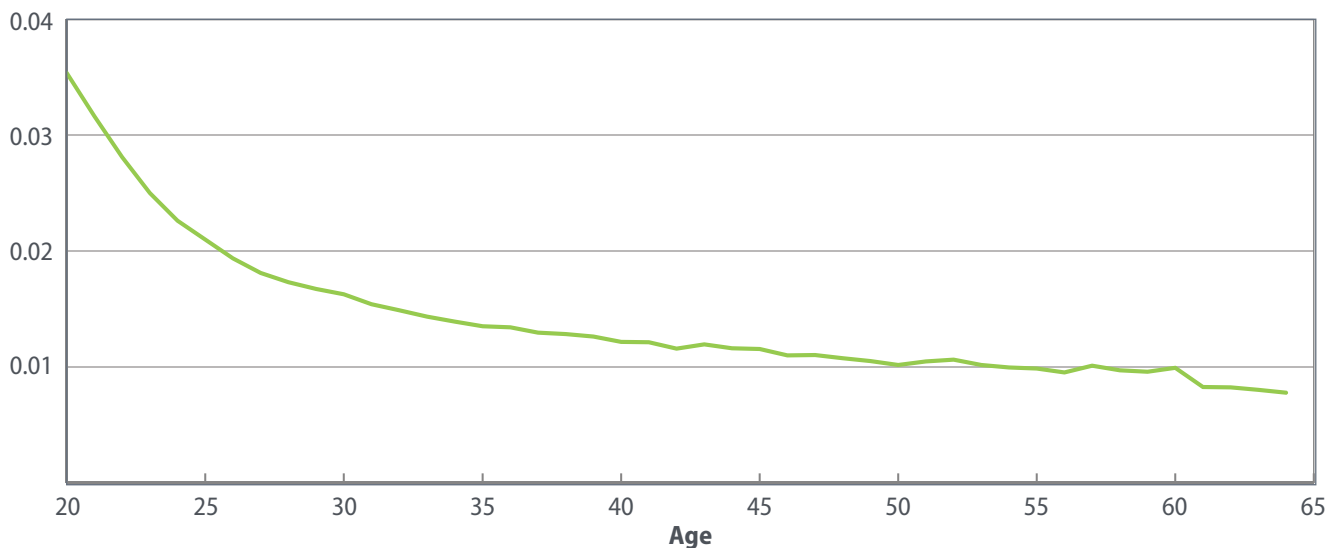
There are other factors that also may help account for the fact that young households avoid risky invest-

ments. For example, the standard advice to favor stocks over bonds early in life assumes that there are no fixed costs to participating in the stock market. But the fact that many poorer and younger households do not own any stocks at all suggests otherwise. There may in fact be a fixed cost to participating in stock markets that these households find prohibitive.

In a *Review of Financial Studies* article, Cocco argues that the ability of young households to pay this fixed cost is constrained by holdings of illiquid assets—primarily housing.⁹ Homes represent an illiquid asset because they are costly to resell. For young households, a home often accounts for a significant portion of their wealth. This means that young households may have fewer liquid assets to pay the fixed costs of stock market participation, and so they largely choose not to invest. As households age, their liquid assets become less constrained and they are more able to participate in the stock market.

Cocco also finds that housing price risk crowds out investment in stocks. After introducing the possibility of housing price shocks into his model, he finds that stock holdings are lower for all households. The effect is particularly pronounced for households with less than \$100,000 in net worth, which would include many young households. Like labor market risk,

Figure 3: Probability of Becoming Unemployed in the Following Year



Source: Choi, Sekyu, Alexandre Janiak, and Benjamín Villena-Roldán, “Unemployment, Participation and Worker Flows Over the Life-Cycle,” Barcelona GSE Working Paper No. 617, March 2012.

housing price risk reduces the appetites of young investors to take on additional risks in the stock market.

Investment Choice

Upon first examination of the data, it seems as though young households are ignoring conventional financial wisdom when making investment choices. But economists have identified several risks that simple investment advice overlooks. When they consider labor market risks, income uncertainty, income and stock market risk correlation, and liquidity risks, they provide a more complete picture of the financial situation of most young households. Models that incorporate these elements more closely predict actual investment behavior than simpler rules of thumb, suggesting that many households already are taking these risks into account when choosing their investment portfolios.

Economists also stress the importance of individual risk tolerance in investor decision-making. More risk-averse households naturally will have a lower appetite for investing in stocks over the long run. Taken together with the evidence on labor market and housing risk, this analysis suggests that one size of financial advice will not fit everyone. ■

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Endnotes

¹ For example, one popular investment text notes that over a 20-year period, stocks outperform bonds 91.3 percent of the time, and over a 30-year period, they outperform 99.4 percent of the time. See Malkiel, Burton G., *A Random Walk Down Wall Street*, New York: W.W. Norton & Company, 2011, p. 364. See also Mehra, Rajnish, and Edward C. Prescott, "The Equity Premium: A Puzzle," *Journal of Monetary Economics*, March 1985, vol. 15, pp. 145–161.

² Economists have developed models that cast doubt on this argument. See Jagannathan, Ravi, and Narayana R. Kocherlakota, "Why Should Older People Invest Less in Stocks than Younger People?" *Federal Reserve Bank of Minneapolis Quarterly Review*, Summer 1996, vol. 20, no. 3, pp. 11–23.

³ For example, see Malkiel, 2011, p. 379.

⁴ See Cocco, João F., Francisco J. Gomes, and Pascal J. Maenhout, "Consumption and Portfolio Choice over the Life Cycle," *Review of Financial Studies*, Summer 2005, vol. 18, no. 2, pp. 491–533.

⁵ See Choi, Sekyu, Alexandre Janiak, and Benjamin Villena-Roldán, "Unemployment, Participation and Worker Flows over the Life-Cycle," *Barcelona GSE Working Paper No. 617*, March 2012.

⁶ See Topel, Robert H., and Michael P. Ward, "Job Mobility and the Careers of Young Men," *Quarterly Journal of Economics*, May 1992, vol. 107, no. 2, pp. 439–479.

⁷ See Chang, Yongsung, Jay H. Hong, and Marios Karabarbounis, "Labor-Market Uncertainty and Portfolio Choice Puzzles," *Federal Reserve Bank of Richmond Working Paper No. 14-13*, June 16, 2014.

⁸ See Benzoni, Luca, Pierre Collin-Dufresne, and Robert S. Goldstein, "Portfolio Choice over the Life-Cycle when the Stock and Labor Markets are Cointegrated," *Journal of Finance*, October 2007, vol. 62, no. 5, pp. 2123–2167.

⁹ See Cocco, João F., "Portfolio Choice in the Presence of Housing," *Review of Financial Studies*, Summer 2005, vol. 18, no. 2, pp. 535–567.

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