The case for investing in bonds during retirement

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By Anthony Webb*

Introduction

For households seeking retirement income security, short-term deposits (such as money market accounts, certificates of deposit, and Treasury bills) seem an ideal and appropriate investment choice – particularly given the recent extraordinary turbulence in the financial markets. Over the past year, an investment in short-term deposits would have actually outperformed investments in corporate bonds and far outperformed corporate stocks.[1]

Retired households exhibit a strong preference for holding such apparently safe investments. One study found that 86 percent of households nearing retirement (ages 60-64) had bank accounts, while only 33 percent owned stocks directly and only 7 percent owned bonds directly.[2] And the desire for short-term investments increased with age. But short-term investments, while safe, produce uncertain returns.

This *Issue in Brief* highlights the trade-off that households must make between a guaranteed return *of* capital and a guaranteed return *on* capital – they cannot have both at the same time. Short-term deposits provide a guaranteed return *of* capital, but offer no guarantees as to the return the household will receive *on* its capital. In contrast, a portfolio of Treasury bonds of appropriate maturities provides a guaranteed return *on* capital, but with the return *of* capital guaranteed only at maturity.[3] This *brief* argues that retired households seeking a secure and dependable income should prioritize return *on* capital over return *of* capital. For such households, the true risk-free asset is a portfolio of bonds and, in particular, inflation-protected bonds of appropriate maturities.

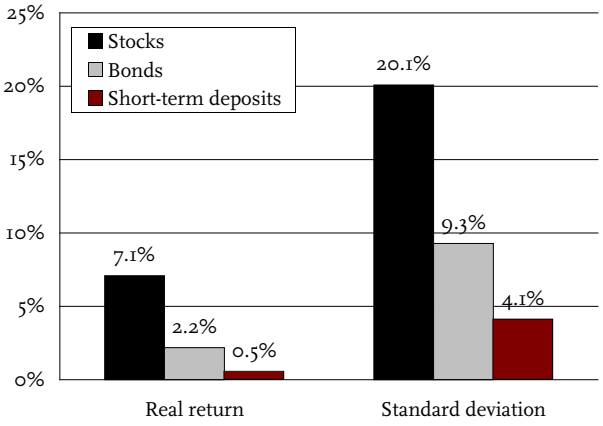
Risk and Return Characteristics of Different Assets

According to conventional wisdom, stocks offer the highest returns, but also carry the greatest risk. Bonds offer somewhat lower returns, but carry some risk. Certificates of deposit, Treasury bills, and money market and savings accounts offer the lowest returns,

* Anthony Webb is a research economist at the Center for Retirement Research at Boston College. The Center gratefully acknowledges AARP for its exclusive financial support of this *Issue in Brief*. This *brief* provides general guidance that may be useful in many circumstances. However, for any specific household, an investment or financial planning strategy should be based on the particular household's personal and financial circumstances. The author strongly recommends that households seek appropriate financial advice prior to making any financial decisions.

but are completely risk-free.[4] As shown in Figure 1, over the period 1926 to 2007, stocks have yielded an annual average real return of 7.1 percent, while long-term corporate bonds and short–term deposits have yielded only 2.2 and 0.6 percent, respectively. Over the above period, the standard deviations of the returns on stocks, nominal bonds, and short-term deposits amounted to 20.1, 9.3, and 4.1 percent, respectively. At first glance, one might conclude that risk tolerant households should invest mainly in stocks, while the more risk-averse should hold a larger proportion of their wealth in short-term deposits.

Figure 1. Mean and Standard Deviations of Returns on Stocks, Bonds, and Short-Term Deposits, 1926-2007



Sources: Burtless (2008); and Center for Research in Security Prices (2008).

The following section explains how the investment characteristics of cash differ from those of long-term bonds, why short-term deposits are a riskier long-term investment than they first appear, and why risk-averse households seeking to finance consumption in retirement should hold at least a proportion of their wealth in long-term bonds.

Return *of* Capital versus Return *on* Capital

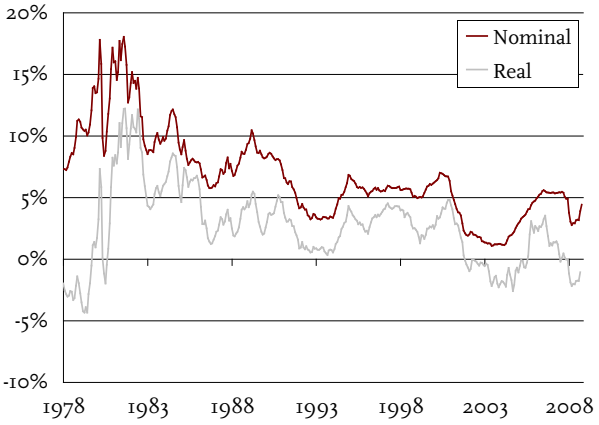
This section explains the investment characteristics of bonds and short-term deposits, focusing on the comparison of return *of* capital to return *on* capital.

Short-term Deposits

A household investing in short-term deposits is assured the full repayment of its investment on maturity. In contrast, the household is subject to reinvestment risk. That is, the household has no guarantee of being able to reinvest the proceeds of a certificate of deposit at the same rate of interest. Nor does the household have any protection against the effects of inflation. These characteristics can make them an unreliable source of retirement income.

Figure 2 shows the nominal return on a six-month certificate of deposit over the past 30 years, and the real return after deducting current inflation. As shown, there have been considerable fluctuations in both nominal and real returns.

Figure 2. Nominal and Real Return on Six-Month Certificate of Deposit, 1978-2008



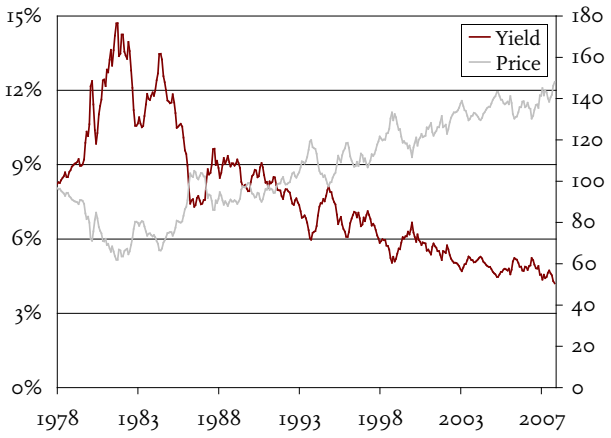
Source: Federal Reserve Bank of St. Louis (2008).

Long-term Bonds

In contrast to short-term deposits, a purchaser of a long-term bond receives a fixed income for an extended period, sometimes as long as thirty years, and the repayment of principal at the end of that period. Thus, if the buyer intends to hold a Treasury bond (a bond issued by the U.S. government) to maturity, the only risk is inflation risk. For corporate bonds, an additional risk is that the borrower defaults. But if the bond holder needs to sell the bond before maturity, the market price may be greater or less than the amount originally invested.

These fluctuations are the result of the relationship between bond prices and interest rates.[5] Figure 3 shows the movements in the price and yield of the 30-year Treasury bond over the past 30 years. When interest rates increased, the bond price decreased, and when interest rates decreased, the bond price increased.

Figure 3. Yield and Price of 30-Year Treasury Bonds, 1978-2008

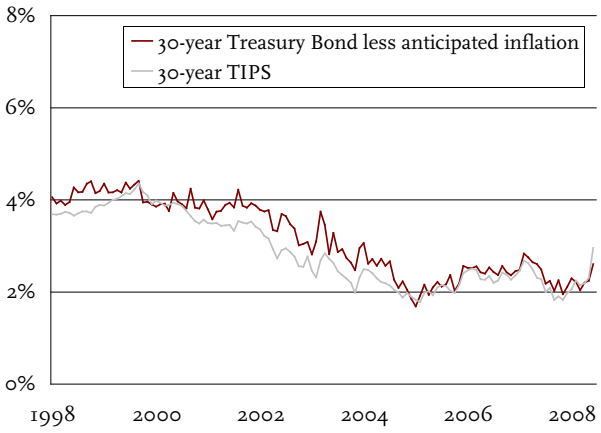


Note: The Treasury ceased publication of the 30-year constant maturity series on February 18, 2002 and resumed that series on February 9, 2006. To estimate a 30-year rate during that timeframe, an "adjustment factor" provided by Treasury was added to the Treasury 20-year Constant Maturity.
Sources: Federal Reserve Bank of St. Louis (2008); and author's calculations.

The Special Case of Treasury Inflation-Protected Securities

The United States government also issues Treasury Inflation-Protected Securities (TIPS), bonds whose interest payments and eventual repayment of capital are linked to the Consumer Price Index. Because of inflation-indexing, the TIPS yield is expressed in real terms. By comparison, the yield on a Treasury bond is typically expressed in nominal terms, and both the value of the investment and the interest payments are eroded each year by inflation. The anticipated real income of a Treasury bond equals the nominal yield, minus anticipated inflation. Figure 4 shows the yield on a TIPS with an original maturity of 30 years. For comparison, it also shows the yield on a 30-year constant maturity Treasury bond, net of anticipated inflation. The yield on TIPS, and the anticipated real yield on the Treasury are almost equal. However, a risk-averse investor might prefer the TIPS because it protects him against unexpectedly high inflation.

Figure 4. Yields on 30-Year TIPS and 30-Year Treasury Bonds Less Anticipated Inflation, 1998-2008



Note: TIPS are 30-year Treasury inflation-indexed bonds issued in 1998 and due 4/15/2028 with a coupon of 3 5/8 percent. Issuance of the 30-year constant maturity Treasury bonds was discontinued on February 18, 2002 and resumed on February 9, 2006. To estimate a 30-year rate during that timeframe, an "adjustment factor" provided by Treasury is added to the Treasury 20-year Constant Maturity. Treasury bond yield is net of 10 year anticipated inflation.
Sources: Federal Reserve Bank of St. Louis (2008); and author's calculations.

Which is Safer – Cash or Bonds?

Many households' instinctive reaction will be that cash and short-term deposits must be safer than bonds because the market value of bonds can fluctuate. But this view may be too simplistic.

The ultimate objective of retirement saving is to finance consumption. The standard of living of a household that invests in short-term deposits is at risk if short-term interest rates fall. In contrast, changes in interest rates and bond prices may have no effect on the standard of living of a household investing in bonds.

Consider the admittedly unrealistic case of a household that expects to live for at least 20 years and wants the return of its capital at the end of that pe-

riod. This household could invest in 20-year Treasury bonds, and obtain a guaranteed dollar income for the next 20 years. It could even invest in 20-year TIPS, and receive a guaranteed inflation-adjusted income for the next 20 years. Interest rates, and the market value of its investment, might fluctuate during that period, but these would not concern the household, because it has no intention of selling. For this household, bonds are the safe investment and short-term deposits are the risky investment.

Practical Advice for Most Households

In reality, households may want to spend some of their capital during retirement. These households will care about the price at which they can sell their investment. If the household knew in advance when it wanted to consume its capital, it could assemble and manage a bond portfolio with income payments and returns of capital on maturity that precisely matched its consumption needs.

But this task probably requires more knowledge and patience than most households possess. A simple version of this strategy is to invest in a mutual fund or exchange traded fund investing in bonds with an average duration that equals the household's life expectancy. Early in retirement, the household would invest mostly in long-dated bonds. Later in retirement, it would gradually rebalance its remaining assets in favor of shorter maturity bonds, matching the reduction in its remaining life expectancy.

Many households are concerned about the risk of being forced to draw on their capital, possibly unexpectedly, as a result of a health shock. Investments in long-term bonds can, of course, always be liquidated. Households need to trade off the risk of loss against the costs, in terms of income uncertainty and reductions in yield, of holding an excessively large proportion of their wealth in the form of cash and short-term deposits. The right answer will vary from household to household, depending on their sources of retirement income and the extent of their health insurance coverage.

Households also need to optimize their investment allocation between stocks and bonds. Social Security has investment characteristics similar to those of TIPS – it pays out a guaranteed inflation-protected income. Defined benefit pension plans have investment characteristics similar to those of nominal bonds. So these sources of income are good substitutes for inflation-protected and nominal bonds in household portfolios, and households with large amounts of these sources of income should invest larger proportions of their financial assets in equities than otherwise similar households.

Conclusion

Households have a clear preference for short-term deposits over bonds. This may reflect "myopic loss aversion," a greater sensitivity to losses than to gains, and a tendency to evaluate portfolio returns frequently, which is supported by academic research on portfolio choices.[6] This research has been used to explain low levels of participation in the equity market, but can also explain why households avoid bonds. It suggests that households need to make a conscious effort to learn to focus less on the market value of their investments and more on the consumption they can support.

Endnotes

1 The Wilshire 5000 Index fell 42% from the peak of the market on Oct.9, 2007 to Oct. 9, 2008 (Wilshire Associates 2008). An average investment grade long-term corporate bond from the Moody AAA bond index bought on Oct. 9th 2007 would have lost .5% over the same period. Two 6-month certificates of deposit, one bought on Oct. 9, 2007 and then another on April 9, 2008, would have given a nominal annual return of about 3.96 percent based on the market rates from the St. Louis Federal Reserve.

2 Coile and Milligan (2006). Households in both the *Health and Retirement Study*, the dataset analyzed by Coile and Milligan, and the *Survey of Consumer Finances* are only asked in the most general terms about how their IRA and 401(k) wealth is allocated across asset classes.

3 Bonds are subject to default risk. This risk is virtually zero for bonds issued by the United States government and can be otherwise minimized by holding a portfolio of high-grade corporate bonds through a bond mutual or exchange traded fund.

4 Treasury bills are issued by the United States government. Bank deposits are insured by the Federal Deposit Insurance Corporation up to a limit of $250,000. Money market accounts have rarely "broken the buck," (i.e. had a redemption value less than the amount originally invested).

5 Suppose the current long-term interest rate is five percent. Investors will be willing to pay $100 for a twenty-year bond that pays $5 every year from 2009 to 2028, when the $100 will be repaid. But if market interest rates increase to six percent, an investor purchasing a newly issued bond could obtain $6 a year income for every $100 invested. Nobody would be willing to pay $100 for a bond paying only $5 when they can spend the same amount and get $6. So the price of the bond paying $5 must fall to make it attractive to investors. Suppose the price at which it is traded on the stock exchange falls to $88.50. An investor would get $5 a year for every $88.50 invested, a yield of 5.65 percent – still less than the six percent on a new bond. But if he held his investment until 2028, he would be repaid $100 for every $88.50 invested, and this capital gain, together with his interest payments provides a total return of exactly six percent, making him indifferent between the two bonds.

When interest rates fall, exactly the opposite happens. Importantly, any given increase or decrease in interest rates has a larger impact on the prices of longer maturity bonds. So the longer the period for which the income is guaranteed, the greater is the risk of a substantial decrease in the market value of the investment.

6 Thaler et al. (1997).

References

Burtless, Gary. 2008. "Stock Market Fluctuations and Retiree Incomes: An Update." Washington, DC: The Brookings Institution.

Center for Research in Security Prices. 2008. *U.S. Treasury and Inflation Series*. Chicago, IL: University of Chicago.

Coile, Courtney and Kevin Milligan. 2006. "What Happens to Household Portfolios After Retirement?" *Issue in Brief* 56. Chestnut Hill, MA: Center for Retirement Research at Boston College.

Federal Reserve Bank of St. Louis. 2008. *Yields on 30-Year Treasury Inflation-Indexed Securities, 30-Year Treasury Bonds, and Market Returns on 6-Month Certificates of Deposit*. 1998-2008. St. Louis, MO.

Thaler, Richard H., Amos Tversky, Daniel Kahnemann, and Alan Schwartz. 1997. "The Effect of Myopia and Loss Aversion on Risk Taking: An Experimental Test." *Quarterly Journal of Economics* 112(2): 647-661.

Wilshire Associates. 2008. *Dow Jones Wilshire 5000 (Full Cap) Price Levels Since Inception*. Available at: http://www.wilshire.com/Indexes/calculator/csv/w5kppidd.csv.

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The Center for Retirement Research at Boston College was established in 1998 through a grant from the Social Security Administration. The Center's mission is to produce first-class research and forge a strong link between the academic community and decision makers in the public and private sectors around an issue of critical importance to the nation's future. To achieve this mission, the Center sponsors a wide variety of research projects, transmits new findings to a broad audience, trains new scholars, and broadens access to valuable data sources. Since its inception, the Center has established a reputation as an authoritative source of information on all major aspects of the retirement income debate.

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