PRIVATE WEALTH MANAGEMENT

BY STEPHEN J. HUXLEY AND BRENT BURNS

De-Risking Retirement Income

Liability-Driven Investing (LDI) is a popular strategy with pension funds looking to match a stream of payments to retirees, and retirees face the same inflow-outflow problem that pension fund managers face. Income matching is the most appropriate approach to LDI for individual investors because it mitigates, manages, or eliminates many of the risks associated with retirement income.

Baby Boomers will increasingly need to look to their own accounts to support themselves in retirement, treating their 401(k) plans and IRAs as their personal pensions. To generate the stream of withdrawals they will need from their portfolios over 30 or 40 years, most Boomers will require some exposure to the potentially higher returns that equities offer. But this requirement means adding volatility risk to their portfolios to offset the longevity risk of outliving their money. Decumulation introduces a number of risk factors that can be managed by using a partial liability-driven investing (LDI) approach.

LIABILITY-DRIVEN INVESTING FOR INDIVIDUALS

LDI is an institutional investment strategy popular with pension funds looking to match a stream of payments to retirees. In the age of the 401(k), individuals must look to their own portfolios to generate pensionlike income. Retirees face the same inflow-outflow problem that pension fund managers face except that retirees' liabilities are the withdrawals from their portfolios to replace their paychecks. In the financial planning process, they specify how much they will need to withdraw each year over their lifetimes. This specified stream of income represents a stream of liabilities that makes LDI a natural fit for retirement.

Income matching is the most appropriate approach to LDI for individual investors. Under dedicated portfolio theory, an income-matching portfolio can be characterized as a *smart bond ladder*, whereby the portfolio matches a target income stream through a combination of coupon interest and bond redemptions. Duration of the portfolio cash flows is perfectly matched to the income needs; the portfolio is thus fully immunized against interest rate risk without needing to be hedged.

The investing environment of decumulation is fundamentally different from that of accumulation. Retirees must make their portfolios last a lifetime. Most retirees require a withdrawal rate that is higher than the yield curve on government bonds, which means that they must take on the uncertainty of equity investments to achieve a return rate that is high enough to reach their financial goals. Taking on equity exposure, however, introduces a number of risks that need to be managed, including longevity risk. Using an income-matching LDI approach for the fixed-income portion of their overall asset allocation helps manage many of these risks and ultimately helps retirees achieve their retirement goals.

MANAGING RETIREMENT INCOME RISKS

Retirees face many risks beyond the volatility risk treated by modern portfolio theory, including *portfolio risks*, *planning risks*, and *behavioral risks*. Portfolio risks relate directly to investments, including market and liquidity risks. Planning risks concern challenges to achieving long-term financial goals as outlined in a financial plan. Behavioral risks denote flaws in individual decision making caused by emotional responses to changing financial conditions.

Because most individuals cannot afford to income-match their entire lifetime income needs, they must use a partial LDI approach, whereby near-term income needs are immunized by an income-matching portfolio (income portion) and long-term growth is fueled by an equity

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portfolio (growth portion). Note that a partial LDI approach leverages the concept of mental accounting, whereby the income portion becomes a predictable "paycheck" portfolio and the growth portion shifts to a long-term portfolio. The income portion supplies income for several years, providing a time buffer for riding out periods of poor market performance without having to sell growth assets in a down market.

Income-matching portfolios mitigate, manage, or eliminate many of the risks associated with retirement income. **Table 1** lists the risk categories and describes the effects of a partial LDI strategy relative to a more traditional total return approach, whereby the bond allocation is designed to dampen volatility and provide diversification but not to match specific income needs.

Portfolio Risks. Under a partial LDI approach, the volatility of the income portion of the portfolio, caused by rising interest rates (*market risk*), is rendered harmless because bonds are held to maturity. Coupon interest and redemptions are timed to meet the target income needs; thus, the cash flows needed to fund each year do not fluctuate even though the underlying bonds still fluctuate in value. Although volatility remains in the growth portion (equities), average returns over the longer spans are much smoother than returns over spans of a year or less because the time horizons for the growth portion are extended (buffered by the income portion).

Reinvestment risk is eliminated for retirees because the coupon interest and redemptions are spent, not reinvested. The cash flows are precisely matched to the needs identified in the financial plan. *Timing risk* is reduced because income has been set aside for a certain number of years. The income portion will supply the target income stream every year without the need to liquidate

Table 1. Managing Retirement Income Risks through Income Matching

		Effect on	
Name	**Description**	**Income Portion**	**Growth Portion**
Portfolio Risks			
Market Risk	Change in value of assets (volatility)	Eliminated	No Change
Reinvestment Risk	Inability to receive an equivalent yield when coupon payments or redemption values are reinvested	Eliminated	No Change
Timing Risk	Selling when asset prices have declined	Reduced	Reduced
Default Risk	Failure to meet 100% of the interest or redemption value promised by a bond	Reduced	No Change
Planning Risks			
Inflation Risk	Purchasing power of income is reduced due to higher prices	Reduced	No Change
Circumstance Risk	Change in personal circumstances that affects the original plan	No Change	No Change
Longevity Risk	Outliving financial resources	Reduced	Reduced
Behavioral Risks			
Impatience Risk	Inability to stick with a plan due to lack of fortitude or hyperbolic discounting	Reduced	Reduced
Response Bias Risk	Less tolerance for volatility or other planning elements than originally claimed or specified	Reduced	Reduced
Ignorance Risk	Inability to understand investment tradeoffs	Reduced	Reduced
Regret Risk	Disappointment or guilt when investment results fail to meet expectations	Eliminated	No Change

anything. For example, if income is protected over an eight-year horizon, investors could wait out market downturns for several years before needing to replenish the smart income ladder. Although they could theoretically wait up to eight years, investors usually want to maintain a minimum horizon. *Default risk* can be managed by buying only insured certificates of deposit, government bonds, and investment-grade corporate or municipal bonds.

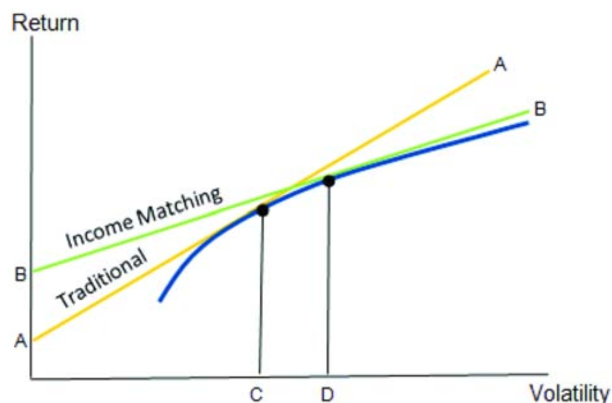
Planning Risks. *Inflation risk* can be reduced (though not eliminated) by building an inflation factor—typically, 3 or 4 percent—into the target income stream. Alternatively, Treasury Inflation-Protected Securities (TIPS) may be used to avoid this risk almost entirely, but TIPS are a very expensive way to manage inflation risk in current markets.

Circumstance risk involves an unexpected event that materially affects the assumptions built into the long-term financial plan. Examples include the debilitating illness of an adult child or grandchild, divorce, and so on. Neither LDI nor any other investment strategy addresses such risks directly.

Longevity risk can be mitigated in several ways. First, introducing equities into the growth portion increases expected return. Second, the income portion is protected from the risk of rising interest rates because the bonds are held to maturity. Although the bonds will fluctuate in value, coupon interest and redemptions will not because they are timed to meet cash flow needs. Third, longevity risk is reduced because the time-targeted strategy of income matching should increase capacity for a more aggressive equity (growth) portfolio. **Figure 1** depicts this scenario in the context of the classic Markowitz efficiency frontier. Line AA represents the capital market line for a risk-free rate of 30-day T-bills—its tangency to the frontier leads to a risk level of C on the horizontal axis, with a commensurate return. Line BB represents the equivalent situation with an LDI strategy that consists of an income-matching portfolio of government bonds (especially TIPS) held over a time horizon of, say, eight years.

Changing the risk-free asset from T-bills to an immunized portfolio of longer-term government bonds moves the yield on the risk-free asset up the *y*-axis as the portfolio shifts out on the yield curve. The higher return at the intercept leads to higher tangency along the frontier and higher volatility for the growth portion of the portfolio at D. But with higher returns, longevity risk will be reduced because the growth portion will have a higher expected long-term return.

Figure 1. Capital Market Line under Traditional and Income Matching Paradigms



Behavioral Risks. Under a partial LDI approach, *impatience risk* is mitigated because investors shift their focus to long-term performance and are less likely to worry about day-to-day or even year-to-year market declines. Their near-term income needs are protected from interest rate risk and are independent of equity market performance. They can roll the income portfolio forward each year by adding a new bond that matures one year later than the longest bond in the current coverage and thereby maintain a perpetual horizon of protected income.

Response bias occurs when investors answer a questionnaire without understanding the questions or the consequences of their answers. A partial LDI approach helps set the bond allocation because most investors find thinking in terms of years of protection for their income more intuitive than thinking in terms of an overall sensitivity to standard deviation.

Although portfolio construction is generally overwhelming for investors, the idea of holding individual bonds to maturity is relatively easy for them to understand. Income matching reduces *ignorance risk* because the purpose of the income and growth portions is clearly articulated and ties directly back to the financial plan.

Because the bonds in the income portion are held to maturity, the worst-case returns are known in advance, thus reducing *regret risk*. Furthermore, investors know whence their income will be coming over the time horizon.

For the growth portion, the performance of equities cannot be known in advance, but as pointed out earlier, return rates are smoother over 5 or 10 years than over 1 year.

CONCLUSION

Although nothing can remove all risks from investing, a partial LDI strategy that relies on dedicated portfolios provides a pathway to reducing or even eliminating most of the common risks that retirees face. Individual bonds held to maturity offer an intuitive approach to solving the retirement income problem. They can go a long way toward allaying the fears and boosting the confidence of investors looking for a retirement income solution.

Stephen J. Huxley is Chief Investment Strategist at Asset Dedication, LLC, and Professor of Analytic Modeling at the University of San Francisco.

Brent Burns is President of Asset Dedication, LLC.