

Todd Millay, executive director of the Wharton Global Family Alliance, a research partnership between Wharton and leading global business families which aims to address the key questions major family firms face, says that the past 25 years illustrate the potential forces that could come into play as retirees plan for their future. “We had inflation in the late 1970s, a high interest-rate environment in the 1980s, a rising stock market followed by a crash, and today we have high oil prices. So you need to think seriously about how future events could affect your assumptions as to how much money you will need.”

A Potential Shortfall

Inadequate retirement planning can leave a wealthy person working longer than he or she had planned. The retirement age has become “fungible” for many people, according to Christopher Geczy, a Wharton finance professor who teaches in the Institute for Private Investors’ Private Wealth Management Program. Even wealthy people, especially those in the \$750,000 to \$2 million “mass-affluent” category, “are finding that the retirement age has to be pushed out to later years because [these people] do not yet have enough to live on if they stop working,” he says.

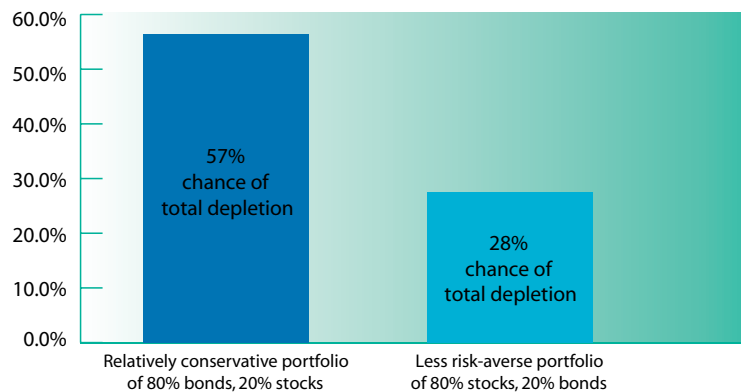
Andrew Scheffer, a financial advisor at UBS Financial Services, says the risk that an individual could run out of money during retirement can be seen by running different scenarios, based on figures compiled by the UBS U.S. Quantitative Research team using historical data for large-capitalization stocks and long-term Treasury bonds from 1926 to 2003. The UBS researchers performed thousands of simulations of randomly selected annual returns for portfolios of stocks and bonds, giving investors a glimpse of the probability of outliving their assets over varying retirement lengths, varying withdrawal rates and varying asset allocations. For example, a relatively conservative portfolio of 80% bonds and 20% stocks, rebalanced annually, and a real withdrawal rate of 6% has a 56.8% chance of total depletion over a 25-year retirement. A less risk-averse portfolio of 80% stocks and 20% bonds, rebalanced annually, and a real withdrawal rate of 6% has a 28.1% chance of depletion over a 25-year retirement (Figure 4).

Mitchell’s research has specifically addressed the issue of how much people at various levels on the income scale need to save for retirement. In a 2002 article titled, *Projected Retirement Wealth and Savings Adequacy in the Health and Retirement (HRS) Study*, Mitchell and co-author James F. Moore, senior vice president of the investment firm PIMCO in Newport Beach, Calif., conclude: “[D]espite seemingly large accumulations of total retirement wealth, the majority of older households will not be able to main-

tain current levels of consumption into retirement without additional saving.”

The Health and Retirement Study, sponsored by the National Institute on Aging, is a massive set of statistics compiled by scholars at the University of Michigan who survey more than 22,000 Americans over 50 every two years. Mitchell and Moore add that delaying retirement by only a few years “reduces the savings burden substantially, and allows for a sizable increase in consumption both before and after retirement.” Households with median net wealth of \$1.363 million—the highest level of wealth studied by the authors—could actually afford to stop saving in the years immediately prior to retirement and still retire at age 62 or 65 with more money than they need to continue pre-retirement level of consumption. But Mitchell and Moore add: “In practice, however, such households probably face substantial liquidity constraints in that their wealth is not immediately available for consumption.”

Figure 4: Risk of Portfolio Depletion Using a 25-Year Retirement
(Real Withdrawal Rate of 6%)



Source: UBS Financial Services

The Cost of Consumption

As Millay and other experts point out, HNWI’s with assets far above those analyzed by Moore and Mitchell have consumption needs and desires that, as a practical matter, can outpace even their asset levels.

“Any amount of money can be frittered away in a remarkably short period of time,” says Millay. “It is amazing how high levels of net worth can translate into high levels of consumption.”

David Zier of Lydian Wealth Management, based in Rockville, Md., recalls an entrepreneur, now in his late 50s, who encountered serious financial difficulty when he first decided to retire because he was ill-prepared. “When he was 50 he sold his first business for a couple million dollars. But he isn’t sure what he did with that money; he can’t account for

where it went. He then built and sold another business and became a client of ours, and netted between \$15 million and \$20 million [from the sale of the business]. He told us, 'I feel like I squandered [the proceeds from the sale of the first business]. I need your help in planning this out. I've hit my second home run. I need to be sure this lasts for a lifetime.'

Zier, whose firm advises about 150 high-net-worth families, recalls another client who had several hundred million dollars in assets but was surprised to learn from an analysis of his financial situation that if he wished to pursue his pas-

sion for art collecting he would have to keep his annual spending to \$15 million or less. "Even if you have \$10 million, if you're spending \$400,000 or \$500,000 a year after taxes, that's a big number for that portfolio to support," he says. (For an extended analysis of a hypothetical HNWI retiree, see below: "Balancing Spending Power with Risk.")

"The Path of Least Resistance"

Just as some investors find it difficult to think about their own mortality and may postpone retirement planning for

Balancing Spending Power with Risk: Advice for a Hypothetical Retiree

David Zier, a financial advisor at Lydian Wealth Management, says advisors can best serve their clients in four ways: "First, you have to provide a cash-flow and risk analysis, helping clients quantify how much they can afford to spend and how much risk they have to take to get there. Two, be sure clients have a disciplined approach to investing: You develop a plan and then stick to it. Three, conduct ongoing analyses relative to the plan to make sure it is achieving the clients' goals. And, four, keep them from making mistakes that could threaten the plan. The biggest risk during retirement, even for high net worth people, is running out of money." Below is his analysis of a hypothetical high net worth client's retirement prospects.

Client: William Koufax

Age: 45

Life expectancy: 75

Net worth: Currently \$2 million; projected to be \$16 million in two years

Retirement goals: To "retire" from his executive position so that he can work for \$1 a year as a fundraiser at his favorite nonprofit

For a long time William Koufax has had two goals: to work for a favorite local nonprofit and to have no financial worries. He may soon have an opportunity to achieve both. His hard work at an Internet company in Silicon Valley could pay off handsomely in the form of stock options when he becomes vested two years from now, at age 47. Koufax wants to leave the company at that time but is not sure if the proceeds that would be generated by exercising the options—which he estimates will be \$14 million—will truly allow him to take a \$1-a-year position as a fundraiser at his local

symphony orchestra. His wife does not work, he still has two children in high school, and he is caring for a seriously ill relative.

Koufax joined Dotcom Startup Inc. in 1994 as a sales executive. He enjoys the challenges there but cannot wait to resign from the company in order to work for the orchestra. He currently has \$2 million in investable assets in Treasury notes and U.S. savings bonds. Until now, the objective of his asset-allocation strategy has been straightforward and is hardly a textbook case of diversification. To Koufax, a conservative investment plan means "freedom." The Treasury securities earn about 4%, throw off interest payments semi-annually, and are free of California state taxes.

His California home, worth \$5 million, is located in a fashionable ZIP Code that is one of the world's wealthiest communities. He has an account at a discount brokerage and manages his own money, as he has since he made his first investment in his 20s. But he wonders if it is not time to turn to an advisor for guidance. He would like to purchase an equity stake in a minor-league baseball club

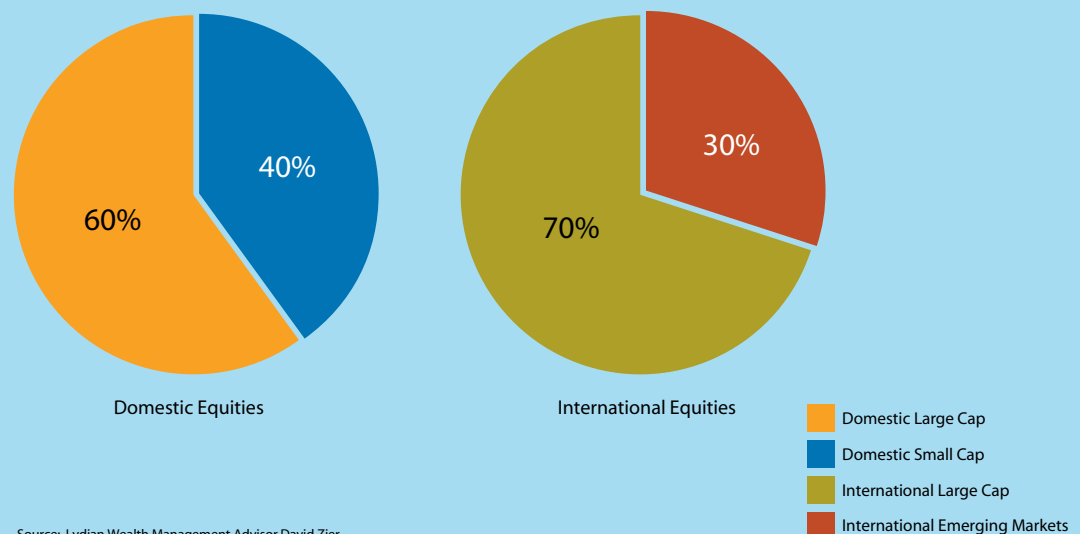
in Arizona that a trusted friend has told him about, but is not certain if this is a smart idea.

Koufax tries to spend his money carefully. He drives a \$21,000 car. His wife once spent \$50,000 on a car, but recently traded down to a \$30,000 Toyota. But Koufax does have one luxury—a swimming pool. In addition, he earned his pilot's license in his 20s but never had enough income to purchase an airplane. He may wish to buy a plane after he leaves Dotcom, but worries it will be too extravagant a purchase. Also, Koufax's 38-year-old cousin suffers from multiple sclerosis. He wants to build a guesthouse for her on his property and care for her for the rest of her life.

"I do think it may be time to get a second opinion on how my money is managed and whether I will have enough to do all the things I want to do," he says. "I'm largely a risk-averse person when it comes to investments. But I probably wouldn't mind investing in stocks if they were blue chips."

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Figure 7: Hypothetical Equity Spread



Source: Lydian Wealth Management Advisor David Zier

years, others have a general apathy toward making critical decisions about their money.

Wharton professors Andrew Metrick and Brigitte Madrian have studied the inertia that comes with making such emotionally weighty decisions — even when they are fairly mapped out, as in the case of some defined employee contribution plans. In a research paper entitled, *Defined Contribution Pensions: Plan Rule, Participant Choices, and the Path of Least Resistance*, Metrick, Madrian and their coauthors found that two-thirds of the employees at seven

large companies believed that they were not contributing enough to their retirement plans, and that a third of this group intended to raise savings rates over the next two months. Plan records showed, however, that almost none of them did, even though their savings rates were indeed low (Figure 5).

“This finding introduces a theme that we return to throughout the paper,” the authors note. “Specifically, at any point in time employees are likely to do whatever requires the least current effort: Employees often follow the ‘path of

least resistance.’ Almost always, the easiest thing to do is nothing whatsoever, a phenomenon that we call ‘passive decision.’”

And, as Metrick, Madrian, and others point out, following the path of least resistance leads to problems down the road for investors at all income levels: Studies have shown that the satisfaction that investors obtain from growing their wealth is not as significant as the pain they feel if they lose money or have to cut back on their lifestyle.

“Going backward in terms of income and lifestyle hurts people and is felt more negatively than making progress toward a goal,” notes Millay. “That may mean that many high net worth people actually need more assets during retirement than they had been expecting. If investors are unwilling to cut back on their expenses, they have to make sure that their assets grow in value. But this is a time in people’s lives when they want to take risk out of their portfolios. So it’s a real challenge to make sure the cost of living doesn’t run away from you.”

III. Retirement Planning: Critical Decisions

One of the critical issues to understand in developing a retirement plan is that wealth not only differs in degree but in kind. Wealth may be measured in the same way—in dollars—but not all wealth is the same. For example, some HNWI’s may have most of their assets tied

Analysis:

If Koufax is going to receive \$14 million, after taxes, when he exercises his stock options and retires, he will be in “good shape,” with a total of \$16 million in investable assets, according to Zier. If he continues to invest all of his money in Treasury securities paying 4%, after taxes, Koufax and his family will have \$400,000 a year to live on.

Koufax is confident \$400,000 will be enough but Zier is not so sure, given the risks posed by inflation, the fact that Koufax expects to live for another 30 years (a life expectancy Koufax based on the lifespan of his mother), college tuition on the horizon, and the possibility that his cousin’s healthcare costs could rise sharply.

Koufax has indicated a willingness to invest in equities and bonds, a decision Zier says is a sound one. Zier suggests that Koufax consider a portfolio consisting of 60% equities and 40% in fixed-income and low-volatility hedge funds. “With the amount of assets Koufax has, he would get a managed account. That’s like a mutual fund, except he would own individual stocks in that account. We would hire a third party to do that.”

Zier recommends that Koufax spread the equity portion of his portfolio across large- and small-cap stocks, both growth and value, along with international stocks, including some in emerging markets. “Of the domestic equity, we’d specifically recommend that he own about 60% large-cap, and 40% small-cap, tilted toward value,” Zier says. “The international equities would be 70% large-cap and 30% emerging markets. This portfolio would be considered only moderately aggressive. We counsel people to be as conservative as possible relative to their goals.” (Figure 7)

Why would Zier recommend a portfolio consisting of 60% equities? “It comes down to how long you need the money to last,” he replies. “You have to have enough exposure to the equity markets to outpace inflation. If Koufax were to put everything in fixed income, he could end up—net of tax and adjusted for inflation—with no real return and possibly run out of money before he dies.”

Zier says Koufax’s desire to invest in a ballclub is not far-fetched; Zier’s firm has several clients who have invested in baseball and basketball teams. But such investments can be risky. For retirement-planning purposes Zier would urge Koufax to take a conservative posture and assume that any money he were to invest in such a business would not be available to fund his retirement.

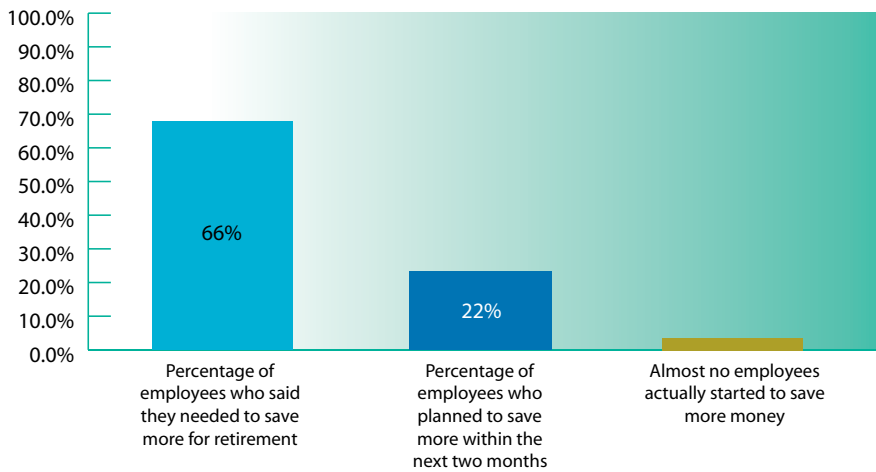
“Often businesses like these have a high risk of failure,” Zier says. “We call them ‘ego investments.’ We would assume that the investment doesn’t work out and that the money is gone. That way, we can look at Koufax’s portfolio and see if it would still operate the way it needs to operate to give him enough cash to live on when he stops working. If he wants to put \$2 million into a minor-league franchise, that may change his cash flow. If he puts in \$2 million and he loses it all or a fraction of it, his chances of running out of money during his retirement go up.”

As for Koufax’s plan to build a \$300,000 guest house on his property for his ailing cousin, Zier suggests that he borrow the money and not pay cash for the construction, even though he could readily afford it. “Hopefully, he would get a better return on that \$300,000 if he invests it relative to the cost of the interest on the mortgage. In addition, he can deduct the interest on the mortgage from his taxes.”

Koufax’s desire to own an airplane could really throw a wrench into his retirement plan. Planes are expensive to purchase and maintain.

“Like everything else, we would factor this kind of purchase into our cash-flow simulation and determine just how much Koufax can afford to spend on a plane and what it’s going to cost to borrow the money,” states Zier. “Planes can cost anywhere from \$100,000 to tens of millions. Many of our clients have a net worth of \$50 million and most of them have jets. They own planes that cost \$3 million to \$5 million—and those planes would be too much for Koufax to afford. Besides, planes like that cost a couple of hundred thousand dollars a year to operate. If Koufax really wants a plane just for fun, he probably shouldn’t spend more than \$100,000 or \$200,000.” ●

Figure 5: The Disconnect Between Knowing There’s a Need to Save for Retirement and Actually Saving for It
(Survey of 200,000 Employees)



up in a business and, as a consequence, have relatively little liquidity. However, these people eventually face two critical decisions. First, they must sell their businesses at the right time and at the right price to maximize the financial rewards of many years of work. In the process, they become inheritors of “sudden wealth” as a result of a “liquidity event” and find themselves, virtually overnight, confronting a second difficult task—properly diversifying their assets to reduce risk by choosing from an array of investment choices.

Other people inherit their wealth, and they, too, may face a type of liquidity event or series of events if their inheritance is distributed at various times. Then there are the people who amass considerable assets in their 401(k) plans or in the form of stock options. They also face diversification issues, but do not have the responsibility of valuing a business and selling it, or of establishing a succession plan if ownership and management of the business is going to pass into the hands of children.

First, Prioritize: “Me, My Family and the World”

“For most high net worth people, retirement planning is as much about estate planning as it is about retirement planning, per se,” notes Millay. “It’s as much a matter of the money you want to leave for others as it is an issue of the amount of money you will need for yourself for the rest of your life.” A comprehensive way to think about retirement planning, he says, is to divide the task into a hierarchy of segments that he labels “Me, My Family and the World.”

“First, you have to provide a lifestyle for yourself that you can live with,” he says. “No amount of money, by itself, is necessarily enough. For most of us, having \$3 million in the bank is probably enough to retire on. But there are people for whom \$3 million might be five years’ worth of spending. So they have to look at the assets they have today and the

lifestyle they want to live in the future.”

Then, HNWIs also must determine how to provide for their spouse, children, grandchildren and perhaps other family members. Finally, they must decide if they would like to provide for charities and other institutions—“the World”—as part of their legacy.

The issue of how much money to leave to children—and at what age—is a particularly sensitive one, says Jonathan M. Bergman, CFP, client service manager of Palisades Hudson Financial Group in Scarsdale, N.Y. “The last thing you want to do is have a 21-year-old inherit a lot of wealth. A 21-year-old is not ready to take on \$3 million. By giving access to too much money too early, you can hurt a child.”

Bergman says it may be better to disperse inheritance money to heirs when they are 25, 35 or even 45. “You want to let children make mistakes with their money, but not all of their money,” he adds. “So we do cash projections and figure out how much we can comfortably give to heirs without impeding the family’s spending.”

Plan for a 100% Replacement Rate

Calculating dollar amounts for categories like those Millay outlines is a complicated process requiring investors to make certain assumptions about the outlook for the economy, inflation, interest rates, life expectancy and a client’s tax situation, as well as determining the client’s aversion to risk and whether they have specific, expensive activities in mind for the future, such as traveling or art collecting.

Zier notes that as a starting point for clients, his firm uses a cash-flow model that takes into consideration projected inflation rates, the client’s personal tax rate, the client’s risk tolerance and time horizon, and the volatility of the client’s portfolio. “We run ‘Monte Carlo’ simulations based on all those factors. It allows us to outline how much the client can afford to spend and how much risk they can assume in their investments. It’s quantitative, goal-based financial planning based on what the client’s situation and economic factors look like today and what we expect them to look like in the future.”

Expenses are an important variable: Some HNWIs are low-expenditure persons, while others enjoy a high-flying lifestyle. Whereas financial planners typically advocate a 70% to 75% replacement rate for income during retirement, Wharton’s Mitchell argues that for most retirees that

may not be enough. “If you look at what people want to do when they retire, most say they’d like to spend about the same amount of money as they did before retirement. My suggestion is to assume that you’ll need a 100% replacement rate. If you end up having more than you actually need, you’ll be in better shape.”

Allocate Your Assets

Millay notes that the asset allocation of a portfolio must reflect the needs, risk tolerance and time horizon of each individual investor. But he says just about all HNWI’s can benefit from adopting certain fundamental principles:

- **Diversify.** Christopher Probyn, chief economist at SSgA, notes that HNWI’s, particularly business owners or corporate executives who own a large amount of stock options and large 401(k)s in their companies, often amass their fortunes by “concentrating their assets narrowly and being on the right horse.” But, he notes, “they can preserve their assets when it comes time to retire by diversifying.” In general, experts advise investors to not bet the future on any one stock, bond, mutual fund, hedge fund or asset class going right. “If you make big bets on any one thing, you’re very exposed,” Millay says.
- **Reduce the overall level of volatility in the portfolio.** While it is true that investors do not achieve superior returns without assuming a certain level of risk, there does come a point where assuming greater risk simply will not produce higher returns—what investment professionals call “asymmetrical risk.” “You have to optimize your risk-adjusted return and you have to take down your level of risk,” says Millay. “Some people may think that if they have nothing but bonds in their portfolio they’ve eliminated risk. But if all you’ve got is bonds, you’re taking a big interest-rate risk [because bond prices decline as interest rates rise].”

Probyn adds that investors may also wish to consider inflation-protected investment vehicles such as Treasury Inflation Protected Securities, known as TIPS, to help guard against inflation eating away at the value and buying power of their assets.

- **Reduce the costs of managing the portfolio.** The passive component of a portfolio can be beneficial in this regard, since index funds and their cousins, exchange-traded funds (ETFs), carry fees that are typically lower than those of actively managed funds. “It doesn’t make sense in many cases to pay high fees to asset managers who can’t consistently outperform benchmark indices,” says Millay.

ETFs, which have become increasingly popular in recent years, are like mutual funds except that they are designed to be traded like stocks. ETFs—such as SSgA’s SPDRs™, Barclays Global Investors’ iShares and Vanguard’s VIPERs— are listed for trade on a stock exchange and priced throughout the trading day at market value. Mutual funds, on the other hand, are priced at the end of each trading day. ETFs are designed to combine the low-cost and diversification advantages of mutual funds with the flexibility of trading.

One investment approach that investors may wish to consider is core/satellite investing, an idea that institutional managers have used for years. A core/satellite strategy combines index funds at the core with satellite investments in individual stocks and bonds, mutual funds or separately managed accounts. The passive core component, which aims simply to match—neither beat nor lag—the performance of a certain group of assets (such as the Standard & Poor’s 500, the Wilshire 5000 or any number of bond indices) is a way to minimize the risk of underperforming the market. At the same time, the complementary, actively managed satellite securities—carefully chosen in consultation with an advisor to match an investor’s risk tolerance and time horizon—offer an opportunity to achieve outperformance.

The most appropriate combination of a core and satellite allocation for individual investors hinges in large part on what financial professionals term an “active risk budget,” which is defined as how much active risk an investor is willing to assume in the process of devising an asset allocation plan. Active risk is the risk that an active manager will underperform the particular benchmark against which the manager’s performance is judged. Active managers seek to outperform a benchmark on a relative basis—they want to do better than the benchmark when the market is up and do less poorly than the benchmark when the market is suffering a decline.

Some wealthy investors may balk at suggestions that they incorporate passive investments such as index funds or exchange traded funds in their portfolios. But such investments are increasingly viewed as essential core investments among financial professionals, according to Wharton’s Geczy, who has conducted research on risk management and the performance of managed funds. (See page 8: “Active or Passive—Or Both?”)

Stay the Course

Retirement planning can seem daunting. But Millay says it is helpful to take a breath and boil down all of the elements of planning to their fundamental purpose. “It’s like physical fitness: If you eat right and exercise, you’ll be OK. Saving is important—not just investing, but saving money in the first place. Think clearly about your needs and your family’s, and your legacy.”

Noting that many HNWI's use financial advisors to map out an investment strategy, Greg Ehret, co-head, advisor strategies at SSgA, says it is important for wealthy investors to keep in mind that they need to develop a plan that truly fits their specific needs and then adhere to that plan through market fluctuations.

"The Standard & Poor's 500 index and other stock or bond indices may or may not mean anything to you as an indi-

vidual investor [in evaluating portfolio performance]," Ehret explains. "What's important is whether your investments are meeting your personal needs vis-a-vis your retirement goals. When markets are going up, many investors want to assume more risk. When markets are going down, investors tend to want to take risk off the table. The most important thing a financial adviser can do is show a client that staying the course is the best way to achieve his or her financial goals." ■

Active or Passive—or Both?

According to Wharton finance professor Christopher Geczy, "There's a tremendous body of academic research regarding passive management, especially in the long run when the shortcomings of active management are evident. Most mutual fund managers don't add much value and they can be really expensive compared to passive investments. People in the lower high-net-worth category can't afford to get into some active management, like hedge funds."

Indeed, research has shown that, between 1995 and 2000, only 6% of managed funds performed better than funds indexed to the S&P 500 (Figure 6). However, a paper by Wharton finance professors Andrew Metrick and Jessica Wachter and Klaas Baks of Brown University entitled *Should Investors Avoid All Actively Managed Mutual*

Funds? demonstrated that superior managers—although difficult to come by, as the 6% figure indicates—do generate significant enough returns to merit investor attention.

Geczy agrees that investors must realize that they should not interpret the academic data to mean that active management is never appropriate. "You would have to have very extreme beliefs to suggest that all investors should eschew active managers," he says. "If you think an active manager can add value, then you might want to allocate a bit of your portfolio to active management."

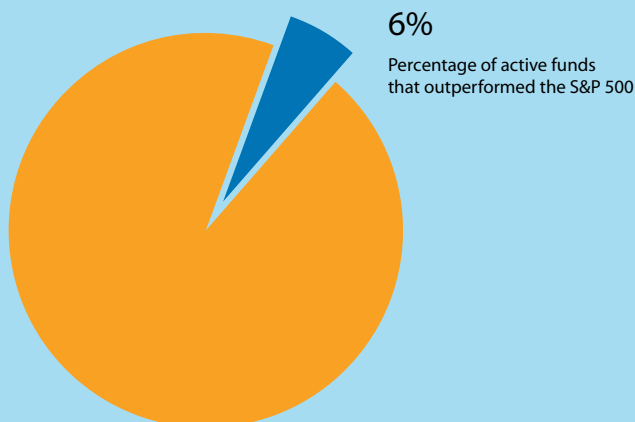
In a subsequent study, Wachter teamed up with colleagues at Harvard and NYU's Stern School to examine the performance of active and passive funds. Through a

form of short-term analysis that avoids the pitfalls of analyzing long-term results—mainly, a lack of risk adjustment for sheer luck on the part of managers—they concluded that, "Consistent with skilled trading ... on average, stocks that funds buy earn sig-

nificantly higher returns at subsequent earnings announcements than stocks that they sell." In their paper entitled, *Can Mutual Fund Managers Pick Stocks? Evidence from Their Trades Prior to Earnings Announcements*, the researchers note that the managed funds that did exceptionally well tended to have a growth-oriented rather than value-oriented style of stock pricing; they tended to be large funds with high portfolio turnover; and they tended to use incentive fees to motivate managers. Those fees are typically more than five times those of passively managed funds. As Wachter and her coauthors write, the open question is "whether active mutual fund managers earn abnormal returns that are large enough to exceed the fees they charge."

Without a clear advantage in terms of returns, an investor might choose to bypass these fees. Geczy points out that choosing the right passive management vehicles to meet one's needs is not an easy matter, however. Thoughtful passive management is necessarily sophisticated. It requires discipline governing asset allocation, the selection of passive-investment vehicles and the issue of risk aversion. Among other things, investors must ask whether they want to invest in international, high-grade or low-grade corporate debt or municipal bond funds; small-capitalization, mid-capitalization or large-capitalization equity funds; or sector funds. ●

Figure 6: Active Funds' Performance from 1995-2000





Portfolio Management: The Balance Sheet Approach

The proposition that high net worth

individuals should be concerned about outliving their assets after they retire might not seem to be a viable one. But Andrew Rudd, founder and CEO of Advisor Software, Inc. (a provider of investment analytic software and advice to high net worth individuals and their advisors) as well as founder and former chairman of the financial risk-management and investment consulting firm Barra, Inc., thinks otherwise. A former professor of finance and operations research at Cornell University who co-authored the books *Modern Portfolio Theory: The Principles of Investment Management* and *Option Pricing*, Rudd has turned traditional portfolio investment analysis on its head with a groundbreaking approach called the Balance Sheet Framework.

“Most portfolio management strategies focus on a client’s assets and then look at how they should be allocated,” says Rudd. “But people also have liabilities, or claims against their assets.” The actual costs of retirement and the cost of longevity need to be considered, and the client’s spending rate needs to be examined to see if it’s sustainable. “Unfortunately, many of these individuals don’t have a clear idea of how they’re spending their money,” he says. “As a result, they don’t know whether or not their retirement assets will be able to cover their needs.”

To address this, Rudd calls for a comprehensive view of the client’s balance sheet—one that encompasses the full range of an investor’s net resources and goals, as well as their portfolio of investments.

“A traditional asset-allocation model lumps assets into rigid classifications, like long-term or short-term,” explains Rudd. “But assets that appear similar really are not all the same. What if one person’s wealth is in liquid instruments, while another’s is in an illiquid corporation, or in mid-Western farmland? A balance sheet analysis considers these issues, adjusts for risk and appropriately quantifies them.”

1. Isolate Assets

Like a traditional financial planning analysis, a balance sheet approach begins with an examination of the client’s circumstances. But instead of focusing on a cash-flow perspective—which would generally involve a simple separation of the client’s assets into non-taxable categories like 401(k) plans, and taxable investments in equities and other financial instruments—Rudd considers the totality of the net assets that can be used to support future aspirations and goals. Among other items, this could include the value, net of deferred taxes, of the client’s retirement account, the equity she has in her home, and the present value of anticipated social security payments. Estimated daily living expenses would be subtracted from these assets to arrive at a net value.

A balance sheet approach also encompasses decisions about liquidity, taxes and other considerations, according to Rudd.

“We suggest looking at the types of asset classes that are held, and how those classes are distributed between the regular and sheltered accounts,” he says. “We also periodically rebalance the overall portfolio.”

As an example Rudd presents a fictional 50-year-old mid-level financial services executive whose wife, 48, is a full-time homemaker. They have two children ages 13 and 10. They have a home with 10 years left on a 20-year mortgage. Rudd notes that the family has \$300,000 in a 401(k) plan, \$100,000 in taxable investments and reasonably expects to inherit \$200,000 sometime during the next 10 years. This example assumes that the husband is going to work until age 65 (Figure 1).

Figure 1: The Traditional View

Portfolio	
401(k) Account	
Lehman Aggregate	150,000
S&P 500	150,000
Taxable Account	
S&P 500	40,000
EAFE	60,000
Analysis	
Domestic Equity	48%
International Equity	15%
All Equity	63%
Fixed Income	37%

A balance sheet analysis starts with a much more complete description of the family's circumstances, but following an economic rather than cash-flow perspective (Figure 2). First, the present value of the family's net assets that can be used to support their future aspirations and goals will be listed. To keep it simple, Rudd suggests netting out the day-to-day living expenses.

Figure 2: Balance Sheet—Resources

Resources	
401(k) Account	
Securities	300,000
Deferred Tax	(30,000)
Net Value	270,000
Taxable Account	100,000
All Investments	370,000
Social Security	275,000
Home	
Market Value	1,500,000
Mortgage	(424,000)
Deferred Tax	(81,000)
Net Home Equity	995,000
Human Capital	
Base Salary	257,000
Bonus	289,000
Net Human Capital	546,000
Prospective Inheritance	200,000
TOTAL RESOURCES	2,386,000

So, despite the fact that traditional investment analysis would conclude that the family has only \$100,000 in a taxable investment portfolio, they are actually worth nearly \$2.4 million, at least under a balance sheet analysis.

"This family's portfolio appears to be quite diversified since it includes real estate, human capital, and traditional investments," observes Rudd. "But overall, it is relatively illiquid and unmanaged."

In fact, he points out that perhaps the family really can't exercise much control over their assets. The husband can decide to change jobs or not to work, but if he decides not to work or becomes disabled, a large part of the family's resources disappears.

2. Determine Goals

"In the balance sheet approach, the resources serve one purpose—funding goals," says Rudd. "The family's goals represent the other side of this balance sheet, which also needs to be analyzed." (Figure 3)

This hypothetical family has two primary goals: retirement in a lower cost region like Arizona, and a college education for their children. Given these circumstances, the present value of the retirement income the parents will likely need will be a bit over \$1.7 million. This assumes that they maintain their present standard of living, that they are likely to have a more beneficial tax rate in retirement, and that they will purchase a house in Arizona.

Figure 3: Balance Sheet—Goals

Goals	
Retirement	
Income	1,178,000
House in Arizona	500,000
Total Retirement	1,678,000
Education	
Older child	250,000
Younger child	116,000
Reserve for younger child	110,000
Total Education	476,000
TOTAL GOALS	2,154,000
NET RESOURCES	232,000

This family is planning for an Ivy League education for the older child, starting five years from now with an estimated cost of \$250,000. They also need a reserve for the younger child (who will likely not go to an Ivy League institution), because they want to provide about the same amount of funding for each. The total education goal is approximately \$500,000, so the total amount of their goals is a little over two million dollars. This leaves them with net resources of \$232,000, which represents the excess of their resources over the present value of the goals.

"In this case the net resources number is positive, so in a deterministic environment they may be able to meet their goals," says Rudd. "But we must also consider their 'margin of safety,' which is the net resources as a percentage of total resources."

That's about 10%, which is somewhat slim, and suggests that although the family can likely afford their goals, they cannot afford any sloppiness in their financial management.

3. Quantify Liabilities

So far, though, portfolio risk has not been considered. Rudd starts by looking at the single largest liability: the mortgage.

"Because the family's mortgage represents borrowing from a bank, they essentially lack a fixed income investment equal to the remaining mortgage balance of \$424,000," he explains. "The net value of the family's rather exotic fixed income portfolio, therefore, is \$101,600 short with a modified duration (the price sensitivity of a financial instrument relative to interest rate changes) of 25.4 years (Figure 4). As a result, this is a very long-term obligation with significant interest rate sensitivity."

Figure 4: Portfolio Analysis

Side	Item	Value (\$)	Modified Duration
Short	Mortgage	(424,000)	5
Short	Deferred Taxes	(111,000)	28
Long	Lehman Aggregate	150,000	4.5
Long	Social Security	275,000	22
Long	Mortgage Prepay Options	8,400	n/a
		(101,600)	25.4

"The next point to consider is how the family's exotic fixed income portfolio actually behaves as a result of the primary factors which drive interest rates, namely the real rate of interest and the rate of inflation," explains Rudd (Figure 5). "For example, if long-term treasury rates increase 100 basis points and the increase is due to a change in the real rate, then the return will be negative and the obligation of \$101,600 will increase to \$132,000. However, if we believe the change in treasury rates arises from a change in inflation, the results are different. Because much of the long portfolio is inflation neutral, the change in the value is \$30,600 for a rate of return of 38%. A similarly complex dynamic occurs when the treasury rates fall. If the fall is due to a change in the real rate, then a positive return results, whereas if it is due to inflation, the portfolio is neutral."

Figure 5: Interest Rate Sensitivity

Scenario	Due to	Change in Value (\$)	Return
Treasury rate rises 100 bps	Change in real rate	(30,400)	-35
	Change in inflation	30,600	38
Treasury rate falls 100 bps	Change in real rate	59,600	74
	Change in inflation	(400)	0

When Rudd turns his attention to the family's equity portfolio, it becomes clear that it's not well diversified. The equity component of the portfolio is composed of three assets: the S&P 500, the EAFE, and the bonus component of the husband's salary (Figure 6).

"The total equity component is \$539,000 and we see that the largest part is, in fact, the bonus component of the salary. It is interesting to note that the S&P 500 has 20% exposure to the domestic finance sector, while the bonus component of the salary has an exposure of 100%, since it is paid based on the firm's performance in the financial services sector," says Rudd. As a result, the total weight in the finance sector of the family's equity portfolio is 61%. "This is far from a well diversified portfolio. In fact, it is a highly concentrated portfolio which will behave almost completely in line with the finance sector."

Figure 6: Financial Services Sector Exposure

Equity Portfolio			
Item	Value (\$)	Weight	Domestic Finance Sector Exposure
S&P 500	190,000	35%	20%
EAFE	60,000	11%	0%
Salary, bonus component	289,000	54%	100%
	539,000		

In this case almost 70% of the risk is derived from the bonus compensation, while the direct investments contribute only 6% of the risk. And although the house is the largest asset, it actually reduces their overall risk by 1%, since real estate provides diversification relative to the equity portfolio and has a beneficial response to changes in interest rates and inflation.

"Due to a potential mismatch between the family's assets and their desired level of income in retirement, 25% of the risk is related to their retirement goal," observes Rudd. "In terms of the overall exposures, one can view the bonus compensation as being a major hotspot, as well as the shortfall risk related to their retirement goal. In reality, these two risks are similar to holding a concentrated position in an equity portfolio."

