

► **Retirement Education**

Under the Microscope:

A Closer Look at the Diversification and Risk Taking Behavior of 401(k) Participants and How Plan Sponsors Can Address Key Investing Issues

by Lori Lucas

► **This article reports the findings of research conducted on the asset allocation behavior of 250,000 401(k) plan participants. Included is discussion and analysis of what influences investment behavior and what employers can do to help their employees plan and invest more wisely for their own retirement.** ◀

As a plan sponsor, you know from experience that designing a top-notch 401(k) plan is only half the battle; the other half is motivating participants to make the most of the plan. In fact, in hopes of facilitating participants' efforts to tailor 401(k) investments to their own situation, plan sponsors are offering more investment options than ever before. According to Hewitt Associates' research,¹ the average number of investment options offered is now 11 (up from eight in 1997). At the same time, our research shows that plan sponsors believe participants are not making the most of the fund choices offered. The three investment mistakes uppermost in plan sponsors' minds are that participants:

- Invest too conservatively
- Fail to diversify investments adequately
- Invest without sufficient education in, or knowledge of, 401(k) plans, investment philosophy, objectives and risk.

Are plan sponsors' concerns justified? How well are participants doing in terms of investment decisions? To answer these questions, Hewitt, in conjunction with faculty at Harvard University and the Wharton School of the University of Pennsylvania, examined the asset allocation behavior of more than 250,000 participants across several dozen defined contribution plans.²

In this article, we will share our findings, suggest possible reasons why 401(k) participants are behaving as they are, and offer solutions to help your participants invest—and financially prepare for retirement—more wisely.

HOW THE ANALYSIS WAS PERFORMED

The plans studied had a minimum of 5,000 participants, with data as of December 31, 1998.³ In this study, asset allocations were projected across nine different asset classes for various types of participants, using multiple regression analysis. The analysis was geared to answer the following question: How do participants' asset allocations vary by demographic variables such as age, gender, marital status, pay and participation status? For example, the table shows how age is a factor in causing the

TABLE

Projected Portfolios of Average Married, Male, Active Participants by Age

	25	30	35	40	45	50	55	60	65
Money Market %	2	2	1	1	1	1	0	0	0
Stable Value %	11	9	9	9	10	12	14	18	24
Bond %	6	6	6	6	6	6	6	6	6
Large Stock %	30	33	32	31	31	31	32	31	28
Mid Stock %	4	3	2	1	1	1	1	0	0
International Stock %	5	6	6	6	6	6	6	5	4
Small Stock %	3	3	3	3	3	3	3	3	2
Emerging Markets Stock %	0	0	0	0	0	0	0	0	0
Company Stock %	39	37	40	41	42	40	38	36	34

projected asset allocation of a baseline male, married, active participant to vary.⁴

Figure 1, on page 28, shows that the projected portfolio of the typical married, male, active participant age 25 has about 39% in company stock, 30% in large stock and 11% in stable value. In contrast, the projected portfolio of the typical married, male, active participant age 65 has 34% in company stock, 28% in large stock and 24% in stable value.

Multiple regression was used for this analysis instead of simple averages to facilitate parceling out the effect of each specific variable (like age) on risk—and diversification-related decision making. In contrast, creating averages based on these variables would explain how different participants behaved—but not the ways in which specific demographic variables drive behavior.

KEY FINDINGS

Overall, our study of 401(k) participants' diversification and risk taking behavior revealed four key findings:

- As plan sponsors fear, the typical participant portfolio is poorly diversified, focus-

ing mainly on stable value, large stock and company stock across all age groups and participant types.

- On average, participants do not tailor their portfolios to their time horizon; typical portfolios are fairly clustered at similar risk levels across most age categories.
- Across most demographics, typical portfolio risk levels are uniformly fairly aggressive. However, typical portfolios of lower-salary participants and male participants tend to assume greater levels of risk than those of middle-salary participants and female participants.
- Participants may not be viewing company stock as an asset class, but as a “bonus.” Portfolios tend to take on more expected characteristics when company stock is excluded from the equation.

PARTICIPANT DIVERSIFICATION— A TALE OF THREE ASSET CLASSES

Plan sponsors that struggle with the decision of whether to add that 11th investment option may be disheartened (but perhaps not that surprised) by the fact that the typical projected

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portfolio of married, male, active participants in our study was heavily concentrated in just three asset classes: company stock, large stock and stable value. The table indicates that, across all ages, the projected portfolios of married, male, active participants have between 34% and 42% in company stock, between 28% and 33% in large stock, and between 9% and 24% in stable value. In contrast, portfolio allocations to foreign stock, smaller stock and bonds are comparatively modest across the board. Across all age types, foreign stock (international developed and emerging markets stock) allocations tend to be about 6-7% of equities. Smaller stock (mid-stock and small stock) allocations tend to be about 4-8% of equities, while bond allocations tend to be about 6% of total assets.⁵

The dominance of these three asset classes can be easily accounted for:

- The bias toward company stock may be attributable in part to the fact that among those plans examined, certain companies provide their match in company stock.
- Some companies’ stock returns were extremely high in recent years (e.g., one company’s stock returned over 50% per year over the past five years).
- Generally, participants tend to have higher degrees of comfort with their own company and, by inference, they may feel more comfortable with and knowledgeable about its stock.

Participants undoubtedly favor large stock partly because of the exceptional performance of the Standard & Poor’s 500 Index over the past five years, and because of their greater familiarity with this segment of the market. Meanwhile, the sound risk/return trade-off of stable value through much of the past decade makes this a compelling fixed income choice from the perspective of participants. In addition, defaults are often to stable value, which would lead to higher concentrations, especially if the workforce is uninvolved.

It is also noteworthy that 401(k) assets tend to be sticky: According to the Hewitt 401(k) Index™, on average, less than 0.10% of net assets (as a percent of total plan balances) are transferred among asset classes on a daily basis. To the extent that company stock, large stock and stable value have been investment options in plans longer than other asset classes, the results may reflect participants’ habit of picking and sticking.⁶ Clearly, given the reasons for these concentrations, the job of encouraging broader diversification is not an easy one.

ONE SIZE FITS ALL

Likewise, plan sponsors who are wondering whether participants are digesting messages about investment concepts such as matching risk taking with time horizon (e.g., time to retirement), will not find solace in our results. Although the typical allocation to specific asset classes varied by age in our study, variations were not especially pronounced for the most part, and did not follow expected paradigms (e.g., standard advice given by most financial planners). Namely, the typical portfolios for participants age 25 to age 50 have nearly the same overall equity exposure. Equity exposure only decreases materially for the portfolio of the typical participant who is age 60 and older. It can be argued that there shouldn’t really be that much difference between the asset allocation of 25-year-olds and 35-year-olds when both groups may have more than 25 years to retirement. However, it is surprising to see that the typical portfolio of 50-year-olds, with only presumably ten to 15 years to retirement, has almost an identical equity allocation to that of 25-year-olds.

Within the equity allocation, as noted, holdings are fairly homogenous as well. On the margin, however, the typical portfolios of middle-aged participants were more heavily allocated to company stock, with the typical portfolios of younger participants more heavily allocated to smaller stock. The typical level of equity exposure shared across most age groups is also quite high—over 80% across the typical portfolios of participants younger than age 55. Again, strong market performance may play a big role here: It cannot be determined from the results where conscious decision making on the part of 401(k) plan participants ends and failure to rebalance begins.

ARE MARRIED, MALE, ACTIVE PARTICIPANTS NORMAL? GENDER AS A FACTOR

Issues surrounding investment behavior are further complicated for plan sponsors by the fact that factors such as gender, wages and active status play a role in shaping how participants invest.

Numerous studies have documented the fact that female investors demonstrate a higher level of risk aversion than male investors. Our analysis implies this trend as well; across all age levels, the projected portfolios of male participants assume higher unsystematic (stock-specific) risk than the projected portfolios of female participants. For example, the typical projected portfolio of 40-year-old female, married, active participants has 35% in company stock versus 41% in company stock for comparable male participants. In contrast, there was only a minor difference between female and male participants' portfolios in terms of the overall equity allocation (in this example, 82% and 83%, respectively). The implications are that:

- Women may be more diversification-oriented than men.
- Women may be less ownership-oriented than men.
- Women may less commonly work for companies with matching in company stock than men or
- Women may be more risk-averse as a group than men.

THE MARRIAGE EFFECT

In general, the projected portfolios of unmarried participants (both male and female) appear to assume marginally *less* risk than those of married participants. For example, the projected portfolios of 40-year-old unmarried, male, active participants have lower company stock and total equity allocations than those of their married counterparts. Why would married participants have higher equity allocations, resulting in more investment risk, than unmarried participants?

One thing to consider in terms of the higher degree of unsystematic risk assumed by married participants is that married participants may have spouses with 401(k) plans as well. The spouse's 401(k) plan, in turn, is unlikely to have exposure to the *same* employer's stock. Now, when both spouses' 401(k) plans are considered together, the view is quite different. With allocations to two different companies' stock, the aggregate portfolio for the married participant may end up with the same or even less risk than that of the unmarried participant (who doesn't have spousal 401(k) plan assets changing the equation).

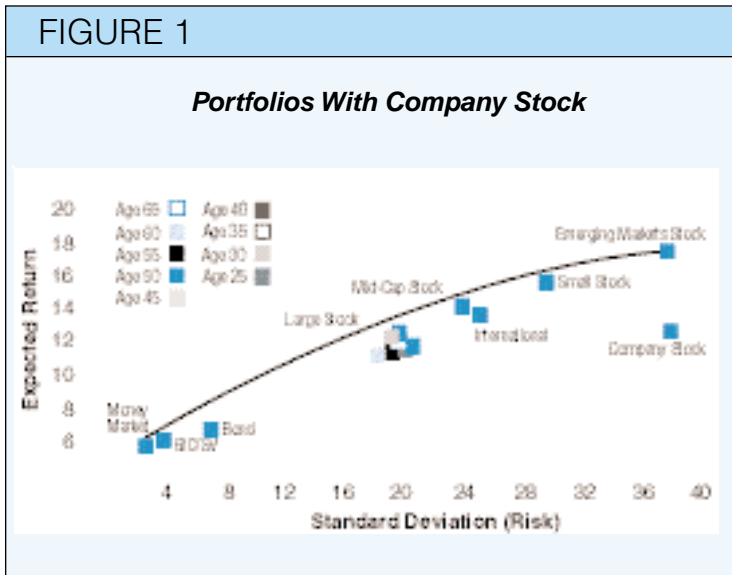
RISK TAKING OF LOWER-PAID INDIVIDUALS

What about high- versus low-income employees? Does salary do much to influence asset allocation in our analysis? In fact, the overall impact of salary level is fairly marginal. What we did see was that the typical portfolios of lowest-paid employees tend to have higher company stock allocations, even though lower-

The Author

Lori Lucas is a defined contribution consultant at Hewitt Associates, directing Hewitt's defined contribution investment research. She has a B.A. degree from Indiana University and an M.A. degree from the University of Illinois. Ms. Lucas is a CFA charterholder and has served on the AIMR Council of Examiners and as a CFA exam grader.

FIGURE 1



paid employees have lower total equity allocations. It could be that:

- Lower-paid employees are less averse to risk (such as unsystematic risk) than higher-paid employees.
- Lower-paid employees are more naive about investing (and therefore have more unsystematic risk in their portfolios) than higher-paid employees.
- A greater proportion of lower-paid employees' balances are employer-contributed in the form of company stock.

WHEN EMPLOYEES TERMINATE

Chances are that many current employees are former employees of other companies. Therefore, understanding the investment decisions of terminated employees can help plan sponsors understand important aspects of current participants' retirement security. Our study showed that terminated participants' portfolios tend to be heavily concentrated in either risky securities (company stock) or low-risk securities (stable value), and not as well diversified as portfolios of active employees. This "barbell" effect points to a particular lack of sophistication among terminated participants—or at least those terminated participants who have failed to roll their assets out of their retirement plan.

Another possibility is that these participants are merely "lethargic" about their retirement

assets—They have left their assets behind at their former employer because of a lack of interest in their plan. Therefore, their naive asset allocations are more the result of inertia than of lack of sophistication. However, terminated participants have slightly higher transfer activity than active participants, mitigating this theory.

By keeping assets in the former plan, employees may be seeking to preserve certain features, avoid restrictions in the new employer plan, or avoid potential fees within IRAs. On the surface, however, their investment choices certainly appear naive.

WHAT CAN PLAN SPONSORS DO? ADVICE

Armed with an understanding of the specific investment issues that different participant types face, plan sponsors can take some fairly clear-cut steps in addressing these issues via investment advice, education and changes in plan structure.

Plan sponsors are increasingly turning to advice—specifically Internet advice from independent providers—to ensure that participants have well-diversified portfolios. Our results show that Internet advice, however, also needs to be very directive in terms of matching participants' time frame and risk tolerance with appropriately risky asset mixes. The quality of Internet advice's risk tolerance assessment should clearly be a driving factor in provider selection.

Further, since it is evident from the analysis that company stock is a significant factor in typical participant portfolios across the board, it is also critical that the Internet investment advice provider is nuanced in its approach to this complex issue. State-of-the-art Internet investment advice providers allow participants to view company stock both as another asset class and as an ownership stake. The difference in perspective is extremely significant, as we can demonstrate using efficient frontier analysis.

In Figure 1, the projected asset allocations of married, male, active participants of varying age groups are input into a mean-variance optimizer with company stock treated simply as another asset class.⁷ In this view, company stock is modeled as having a high degree of both systematic and unsystematic risk. Further,

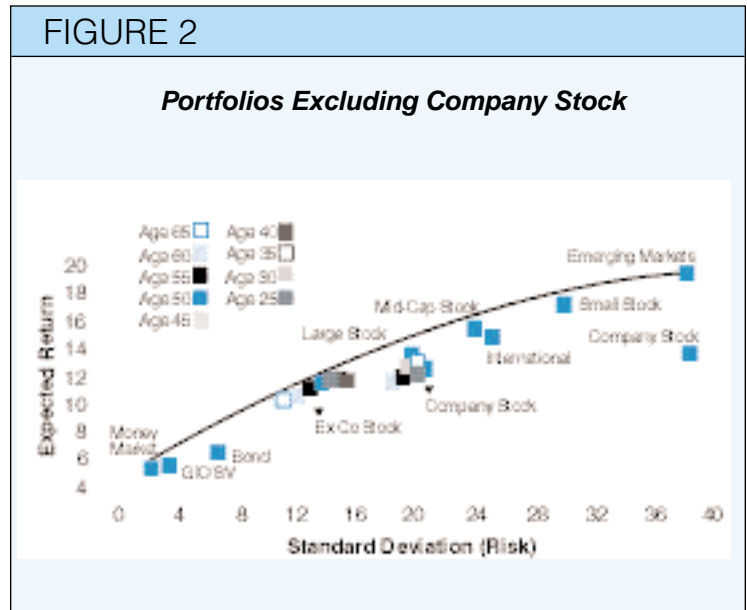
the unbiased estimate for a large company stock's long-term return is given as a market-level return. Because of this, when modeled simply as an asset class, company stock's risk-return trade-off is fairly poor: Large allocations to company stock result in high degrees of total portfolio risk, and portfolios with large allocations to company stock appear fairly homogeneous across all ages.

On the other hand, company stock is also commonly viewed by participants not simply as "another asset class," but as an ownership stake. This especially tends to be the case when the employer stock allocation comes via the company match. In this situation, participants are likely to be making their investment decisions with a bigger focus on their discretionary and diversifiable assets only: To such participants, these are truly their retirement assets. Such participants may be relatively unconcerned about company stock's fit within the mean-variance framework.

Figure 2, again, shows typical portfolios of participants by age, with an added view given that excludes company stock. Again, if participants within each age category are viewing company stock as another asset class from a risk taking standpoint (asset allocations include company stock), then all age groups—even participants ages 60 and 65—appear to be taking aggressive levels of risk (risk of the typical portfolios is greater than that of a 100% large stock portfolio). However, if participants are viewing company stock as a separate benefit—and not part of their diversified portfolios (asset allocations exclude company stock)—it now appears that all participants, even those ages 25 and 30, are assuming quite moderate levels of risk (risk of the typical portfolios is in line with that of balanced funds). Further, under these conditions, participants appear to be doing a better job of differentiating relative risk taking according to time horizon (e.g., younger participants are assuming more risk than older participants).

State-of-the-art independent Internet advice products allow participants to choose the view of company stock that best fits their situation, and then either allocate around company stock, or ignore it within the asset allocation framework. In the case of allocating around,

FIGURE 2



state-of-the-art Internet advice will instruct participants with large allocations to company stock to complement this allocation with their allocation to diversified asset classes. For example, if the stock is that of a large domestic growth company, participants may be advised to focus more heavily on fixed income asset classes, international, small stock and value equity to complement this position. In the case of ignoring the company stock allocation, the company stock positions would be included in retirement income forecasts, but would have no impact on the advice given as to appropriate asset allocation for the participant's situation and risk tolerance.

Internet investment advice can be used to address the other issues revealed in our analysis as well. A solid Internet investment advice product should allow participants to consider all of their retirement assets—including those assets in other plans (such as a spouse's plan), in IRAs and in taxable accounts. This is especially important for married participants and terminated participants who may have large balances in former employers' plans.

TARGETED COMMUNICATION AND EDUCATION'S ROLE

Investment education can be used to address the higher level of risk aversion demonstrated by female versus male participants. Fe-

male participants can be informed that women have a propensity to avoid investment risk more than men; men can be advised that they have a propensity to assume more investment risk than women. Given this knowledge, male and female participants can perform a reality check on their own personal preferences. Likewise, new hires can be targeted to be reminded to consider their other plans in making their asset allocation decisions.

Because lowest-paid employees tend to have higher allocations to company stock than higher-paid employees, it may be important to target these employees in terms of communication to ensure that their risk levels are truly in line with their risk tolerance.

Finally, plan sponsors can break down their own participant base by demographic variables and determine if there are “problem areas,” such as age groups that do not appear to be taking time horizon into consideration. This can lead to cost-effective targeted communication efforts to these demographic groups.

CHANGES TO PLAN PROVISIONS

In terms of plan structure, the simple introduction of automatic rebalancing may do much to prevent participants from becoming overweighted in equities in relation to their true risk taking profile. Automatic rebalancing involves having the recordkeeping system reallocate participants’ balances to the initial allocation automatically on a periodic basis (e.g., quarterly), so that a participant’s initial choice of asset allocation is maintained regardless of market movements. Plan sponsors also may wish to step up efforts to facilitate rollovers of balances from prior employers’ plans into the current employer’s plan.

CONCLUSION

Given the results of our study, it is not surprising that plan sponsors have registered concern about participants’ investment decision making. Fortunately, there are many tools that plan sponsors have at their disposal to facilitate good investment practices among participants. The job of the plan sponsor is accomplished not just by virtue of making the best plan available, but by providing participants with the knowledge and the tools that will enable them to wisely prepare for retirement. ◀

Endnotes

1. *Hewitt's Trends and Experience in 401(k) Plans 1999*, survey of nearly 500 defined contribution plans.

2. Special thanks for the contributions to this research by David Laibson, Ph.D.; Paul Sack, associate professor of political economy, Department of Economics, Harvard University; Andrew Metrick, Ph.D., assistant professor of finance, Wharton School, University of Pennsylvania; and James Choi of the National Bureau of Economic Research.

3. All data used in the study was masked and encrypted at both the participant and plan level.

4. Numbers are rounded.

5. Keep in mind, throughout all of this analysis, the projected portfolios reflect the typical portfolio, but do not give the distribution. In other words, if the project portfolio for a participant type is 50% stocks and 50% bonds, it could be that half of the participants in the average are 100% in stocks and half are in 100% bonds. Despite this, the analysis still provides valuable insight into aggregate behavior.

6. The Hewitt 401(k) Index is the first index of its kind to track the market confidence level and investment activity of 401(k) participants at large corporations exclusively. Based on data collected daily from 1.5 million 401(k) participants with approximately \$68 billion in collective assets, the Hewitt Index tracks the daily transfer activity among 13 asset classes (including self-directed window) relative to an average of previous transfer activity as well as stock market activity. The result is a glimpse into how specific market events affect 401(k) plan participants’ degree of confidence in the market and their investment decisions.

7. To calculate the mean-variance optimization inputs, the Building Block Method was used. Mean-variance optimization was performed using Ibbotson Associate’s EnCORR optimization software.