CENTER for RETIREMENT RESEARCH at BOSTON COLLEGE

January 2013, Number 13-1

HOW DO EMPLOYERS' 401(k) MUTUAL FUND SELECTIONS AFFECT PERFORMANCE?

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Introduction

Defined contribution plans, predominantly 401(k)s, are the primary source of personal retirement savings for American workers, making the investment decisions within these accounts a salient policy concern.[1] These decisions are a result of two separate actions: the mutual fund options selected by the employer's plan administrator and the specific funds chosen by the participant.

While considerable research has examined 401(k) participant decisions in isolation, surprisingly little attention has been focused on the choices made by plan administrators. The administrator's role is clearly influential, particularly if, as indicated by prior research, 401(k) participants themselves do not make good choices. This *brief*, based on a prior study, addresses this research gap by focusing on the fund choices of 401(k) plan administrators and participants' reactions to these choices.[2]

The discussion proceeds as follows. The first section reviews existing research on 401(k) investment decisions. The second section explains the data and the metric used to analyze how employer and employee fund choices affect investment performance. The third section explores how well plan administrators do in choosing mutual funds. The fourth section assesses how well participants do. The fifth section concludes that employers select mutual funds that perform better than comparable, randomly selected, funds but worse than passive index funds, and participants do not add any value through their own decisions.

401(k) Investment Decisions: What We Know

Due to the growing influence of 401(k)s, researchers have examined numerous aspects of the investment choices made by plan participants. Virtually all the findings suggest that the individual investor does not make very good decisions. One study found that participants restrict their investing to three or four mutual funds – regardless of how many funds their employer offers.[3] Other research finds that employees simply divide their savings evenly among the number of funds (N) their employers offer – a strategy known as the 1/N Rule.[4] Other studies examining asset allocation find that plan participants infrequently adjust their allocations; that their ages and cohorts influence their stock allocations; and that they over-invest in their employer's stock, which reduces diversification.[5] In short, the consistent message is that participants often make poor choices.

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All of these previous studies examined participant decisions only. But plan administrators also have a major role as they select a limited menu of mutual funds to offer participants from the large number of available funds. One study that did examine administrator choices found that about one half of plans do not provide sufficient categories of investments to their participants.[6] This *brief* builds on this study by examining whether, given the categories of investments offered, the fund choices selected by plan administrators are good investments per se, and how participants react to the choices.[7]

Data and Methodology

The main data source for both the employer and employee analyses is the 11-K report that an employer files annually with the Securities and Exchange Commission if its 401(k) plan offers the company's own stock as an investment option.[8] The period of analysis covers 1994-1999; data after 1999 were unavailable due to a change in the Securities and Exchange Commission's electronic filing requirements.

Mutual fund selections and performance are analyzed for each plan in the sample; plans are eliminated if they provide data only by broad investment categories such as stocks, bonds, or a specific mutual fund family. This process leaves a sample of 43 plans with individual mutual fund data and an average asset size of $310 million.[9]

Three other types of data are also required. Monthly investment returns for individual mutual funds are from the University of Chicago's Center for Research in Securities Prices (CRSP). Monthly returns for indexes, which are used as benchmarks for performance comparisons, are obtained from CRSP, Morningstar, and a private website. Finally, when a risk-free interest rate is required in the analysis, the yield on 30-day U.S. Treasury bills is used.

The key metric used to gauge investment performance is "alpha," which is the rate of return above or below what would have been earned on a passive portfolio of indexes with the same risk profile. Alpha can be computed for each mutual fund offered and these fund-specific alphas can then be combined to compute an alpha for each employer's 401(k) plan. A positive alpha indicates that the mutual funds in a plan outperformed their benchmark indexes; a negative alpha indicates their performance did not keep pace.[10] Alpha, on average, is negative, because "active" funds managed by stock pickers generally underperform their relevant market indexes.[11] "Passive" mutual funds typically have a negative alpha as well due simply to the fees charged to manage the fund.

The analysis summarized below reports two measures: 1) an alpha for the combined funds in each 401(k) plan relative to a passive portfolio of indexes; and 2) a "differential alpha," which is the difference between the alpha for each 401(k) plan and the average alpha for a randomly selected sample of similar funds.[12]

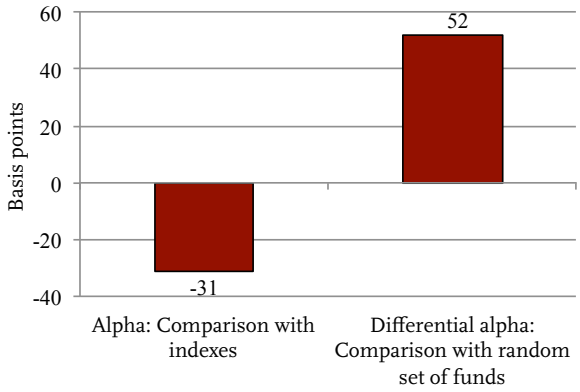
Performance of Plan Administrators

The performance of administrators is evaluated in two ways: 1) by how well each plan's mutual funds do compared to the benchmark indexes (alpha) and to a random sample of similar funds (differential alpha); and 2) by how well funds that were added or dropped perform both before and after the switch.[13]

How Well Do Funds Perform?

The results for the sample plans show that the average alpha over three years of investment performance is -31 basis points annually (see Figure 1). The negative alpha, as expected, confirms that the plans' performance falls below the performance of comparable indexes.[14] The size of this negative alpha is larger than normal expenses for low-cost index funds, suggesting that performance would be improved if passive funds had been substituted for the active funds that were selected.

Figure 1. Performance of Sample 401(k) Plans Based on Alpha and Differential Alpha, in Basis Points Per Year



Note: Results assume equal weighting of each fund within an employer's 401(k) plan.
Source: Elton, Gruber, and Blake (2007).

The average differential alpha for the sample 401(k) plans, however, was +52 basis points annually. This result shows that plan administrators, overall, chose mutual funds that outperformed the randomly selected set of funds by about one-half of 1 percentage point annually.

Lower investment fees are a large part of the explanation for the superior performance of the employer selections compared to the random set of funds. Lower fees, by definition, improve returns by leaving more money in the investor's account. The fees in the employer-selected mutual funds were 23 basis points per year lower than the fees for the random set of funds, accounting for almost half of plan administrators' superior results.

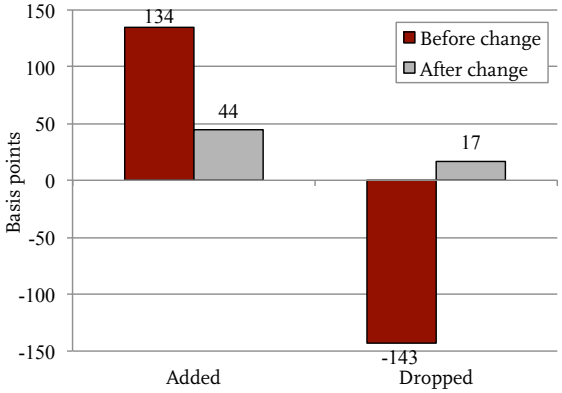
Do Fund Changes Improve Performance?

401(k) investment performance can also be influenced by changes in mutual fund offerings over time. During the period analyzed, the employers in the sample added 215 mutual funds and dropped 45 funds. Many of the additions seem to be motivated by a desire to add a new type of fund, as over half were selected from an investment category not held by the plan at the time of the addition.

The analysis looked at the performance of the added and dropped funds for three years *before* the change was made and three years *after* the change. Not surprisingly, newly added funds outperformed randomly selected funds before the change was made: the differential alpha of the added funds is +134 basis points annually for three years prior to being added to the sample's 401(k) plans. In contrast, before the dropped funds were dropped, they under-performed the random funds by -143 basis points annually. Thus, the added funds outperformed the dropped funds by a total of 277 basis points annually prior to when the changes were made (see Figure 2).

Interestingly, though, this performance bonus essentially disappeared *after* the fund changes were made as the added funds did worse while the dropped funds did better. The differential alphas after the changes are +44 basis points for the added funds and +17 for the dropped funds, and the difference between them is not statistically significantly different from zero. This finding suggests that plan managers were chasing returns, but their efforts to tinker with their fund selections had essentially no impact on overall performance. The outcome underscores the traditional investor's caveat that "past performance does not predict future returns."

Figure 2. Performance of Added Funds and Dropped Funds Based on Differential Alpha, in Basis Points Per Year, Before and After Change



Note: The gap between the added and dropped funds after the changes were made (indicated by the gray bars) is not statistically significant.
Source: Elton, Gruber, and Blake (2007).

Performance of Plan Participants

This section turns to the performance of 401(k) participants to see whether their behavior is consistent with that depicted in the existing literature and to assess whether they add value to the decisions made by plan administrators. The first exercise evaluates whether participants rebalance their portfolio in response to market fluctuations or, instead, chase returns. The second exercise compares the participants' investment strategies, at an aggregate level for each plan, to naïve investment strategies.

Do Participants Chase Returns?

Three factors influence asset allocation: annual returns, participant contributions,[15] and participant transfers. For all sample plans, the median change in the percent of assets allocated to particular investments over all the years analyzed is 3.8 percentage points for investment returns, 1.6 percentage points for participant contributions, and 3.1 percentage points for participant transfers. These numbers indicate how the distribution of assets between mutual funds changes over time. While investment performance has the largest impact on the weightings, participants also have a significant impact when they alter their contributions or transfer assets.

The next step is to determine whether participants' actions magnify or offset the change in allocations caused by investment returns. A regression analysis relates the combined effect of participants' contributions and transfers to the effect of returns for each of the sample plans. The results show that participants' contributions and transfers magnify the change in allocations caused by returns by 57 percent. That is, participants shift their assets toward the best-performing funds and decrease their holdings in the funds that do not perform as well, causing the fund allocations to diverge further from the plans' initial weightings.

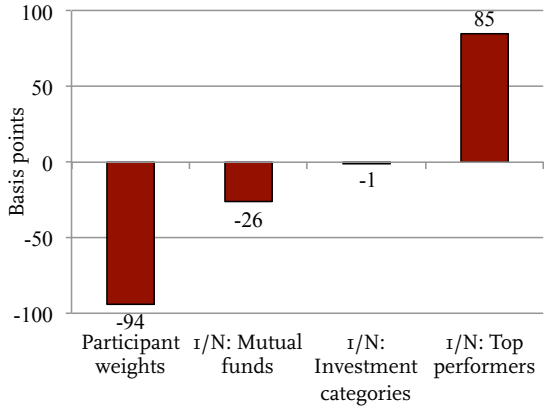
Do Participants Outperform Naive Investment Strategies?

The final analysis examines whether participants' decisions, in aggregate, improve or worsen their 401(k) investment performance. Participants' impact on performance is gauged through a comparison with what their returns would have been if they had instead adopted the simple 1/N Rule, in which investors spread their assets evenly across all of the funds.

The alpha measure is calculated for participants' returns based on their actual investment choices. This measure is then compared to three versions of the 1/N rule: 1) the simple 1/N Rule in which equal allocations are made to each fund; 2) a 1/N Rule in which equal allocations are made to each *investment category*; and 3) a 1/N Rule using only mutual funds with investment performance that fell in the top half of all the funds available.

The results in Figure 3 show that the participants' actual selections performed no better than any of the 1/N strategies. In fact, the participants' results were lower in all cases, though only the difference with the "top performers" strategy was statistically significant at the 5-percent level. These results suggest that participants in aggregate do not add value to the investment performance of their 401(k) through their own decisions, underscoring the importance of the choices made by plan administrators.

Figure 3. Performance Using Participants' Own Fund Weightings and Three 1/N Rules Based on Alpha, in Basis Points Per Year



Note: Estimates are for one-year performance.
Source: Elton, Gruber, and Blake (2007).

Conclusion

The mutual funds that 401(k) administrators select achieve investment returns that are worse than comparable indexes but superior to the returns of comparable, randomly selected funds. A significant part of this latter result is explained by choosing funds that charge lower fees. When making changes to a plan's funds, administrators chase returns and do not end up improving investment performance.

Like their employers, 401(k) plan participants also tend to chase returns, transferring assets into higher-performing funds, rather than rebalancing to restore their original asset allocations. And their investment performance is no better than they would have achieved using variations on the 1/N rule to allocate assets among funds.

Endnotes

1 According to data from the Federal Reserve's *Flow of Funds*, defined contribution plans held over $4 trillion in 2012, with an additional $5 trillion in individual retirement accounts (IRAs) that mostly represents rollovers from defined contribution plans.

2 Elton, Gruber, and Blake (2007).

3 Huberman and Jiang (2006).

4 Benartzi and Thaler (2001).

5 For frequency of allocation changes, see Mitchell et al. (2005) and Madrian and Shea (2001). For impact of employee ages on allocations, see Agnew and Balduzzi (2004). For investment in company stock, see Huberman and Jiang (2006).

6 Elton, Gruber, and Blake (2006).

7 A recently published study by Brown and Harlow (2012) also examined plan administrator choices. It reinforces two of the key findings in the study summarized in this *brief* (Elton, Gruber, and Blake 2007), specifically that the options employers offer to their plan participants do not outperform index funds and do outperform actively-managed mutual funds.

8 One advantage of 11-K filings is that a number of years of data are available to show participant behavior and plans offered by fund families. The disadvantage is that only aggregate – rather than individual – 401(k) participant impacts can be examined.

9 This amount compares with the average $411 million asset size for data used by Liang and Weisbenner (2002).

10 The three-year alpha calculations begin with the date on each employer's 11-K report. For the index benchmarks, alphas are calculated over the three years following the end of each fund's fiscal year.

11 See, for example, Blake, Elton, and Gruber (1993), Elton, Gruber, and Blake (1996), and Grinblatt and Titman (1989).

12 For the purposes of this analysis, a "similar" fund is one in the same Investment Company Data, Inc. (ICDI) investment-objective category and of similar size.

13 This *brief* covers only selected portions of the full analysis presented in Elton, Gruber, and Blake (2007).

14 This *brief* presents results on the alpha and differential alpha for three years of investment returns and assumes that each mutual fund in the 401(k) plan has an equal weight. Elton, Gruber, and Blake (2007) also estimate the differential alpha for a one-year period and for an alternative weighting assumption that weights each fund in a plan according to participants' actual allocations to each fund. The results for these alternative assumptions are broadly similar to those presented here.

15 Employers also make contributions to participants' 401(k) plans. The results for participant contributions are reported separately here as the focus is on participant decisions, and the allocation of employer contributions is sometimes determined by the plan itself rather than by participants. For results that include employer contributions, see Elton, Gruber, and Blake (2007).

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The Center for Retirement Research thanks AARP, Advisory Research, Inc. (an affiliate of Piper Jaffray & Co.), Citigroup, Invesco℠, Mercer, National Reverse Mortgage Lenders Association, Prudential Financial, State Street, TIAA-CREF Institute, T. Rowe Price, and USAA for support of this project.

The research reported herein was supported by the Center's Partnership Program. The findings and conclusions expressed are solely those of the authors and do not represent the views or policy of the partners or the Center for Retirement Research at Boston College.