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White Paper

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A Better Target-Date Fund (The “Better Mousetrap”)

Introduction

Target date funds are part of a major paradigm shift in how participants invest in 401(k) plans. According to a recent Hewitt study, 57% of plan sponsors currently offer target date funds. Moreover, the *Pension Protection Act's* establishment of target date funds as a QDIA (*Qualified Default Investment Alternative*) should accelerate their use by plan sponsors and participants.

Target date funds are evolving from ancillary 401(k) products to the predominant investment vehicle. Plan sponsors need to reevaluate them. Sponsors must come to terms with the litany of asset allocation strategies and glide paths (*gradual shifts from aggressive to more conservative asset allocations over time*). Sponsors must also determine whether the benefits of building a custom target date structure outweigh the convenience of the off-the-shelf prepackaged products. While convenient, off-the-shelf target date mutual funds have structural limitations and potentially fatal flaws. Custom target date structures have many advantages, including the flexibility to employ a broader asset allocation strategy, a better glide path methodology, and use 'best-in-breed' underlying investment managers. For plan sponsors seeking to improve the retirement futures of their participants, a thoughtful custom target date structure can be a **better mousetrap**.

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Competing Target-Date Fund Allocation Strategies

Target date funds employ a variety of investment strategies and glide path methodologies. Exhibit 1 summarizes the expected annualized return and risk for portfolios along the glide paths of three of the most prominent fund companies. The further from the retirement date, the more aggressively the portfolios are invested (heavier US & Foreign Equities allocations). As the retirement date grows closer, the portfolios invest more conservatively

(heavier Cash & Bonds). In the most aggressively positioned funds (i.e., 2045+ funds), each company allocates between 67% and 72% to US stocks and between 15% and 22% to foreign developed stocks. About 10% is allocated to US fixed income. In the most conservative funds (funds that have reached or passed their retirement dates), the funds range from 42% - 82% fixed income (Cash & US Bonds). After the retirement date (denoted by triangles in Exhibit 1), some target date funds continue to markedly reduce risk for several years, while others modestly reduce it.

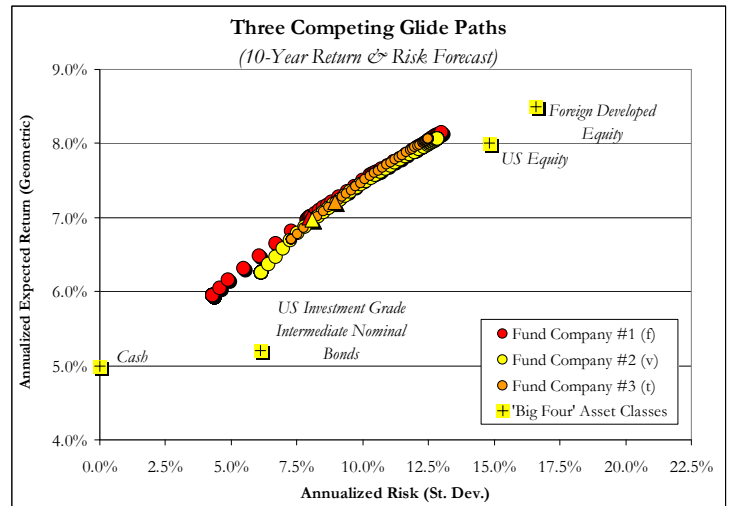
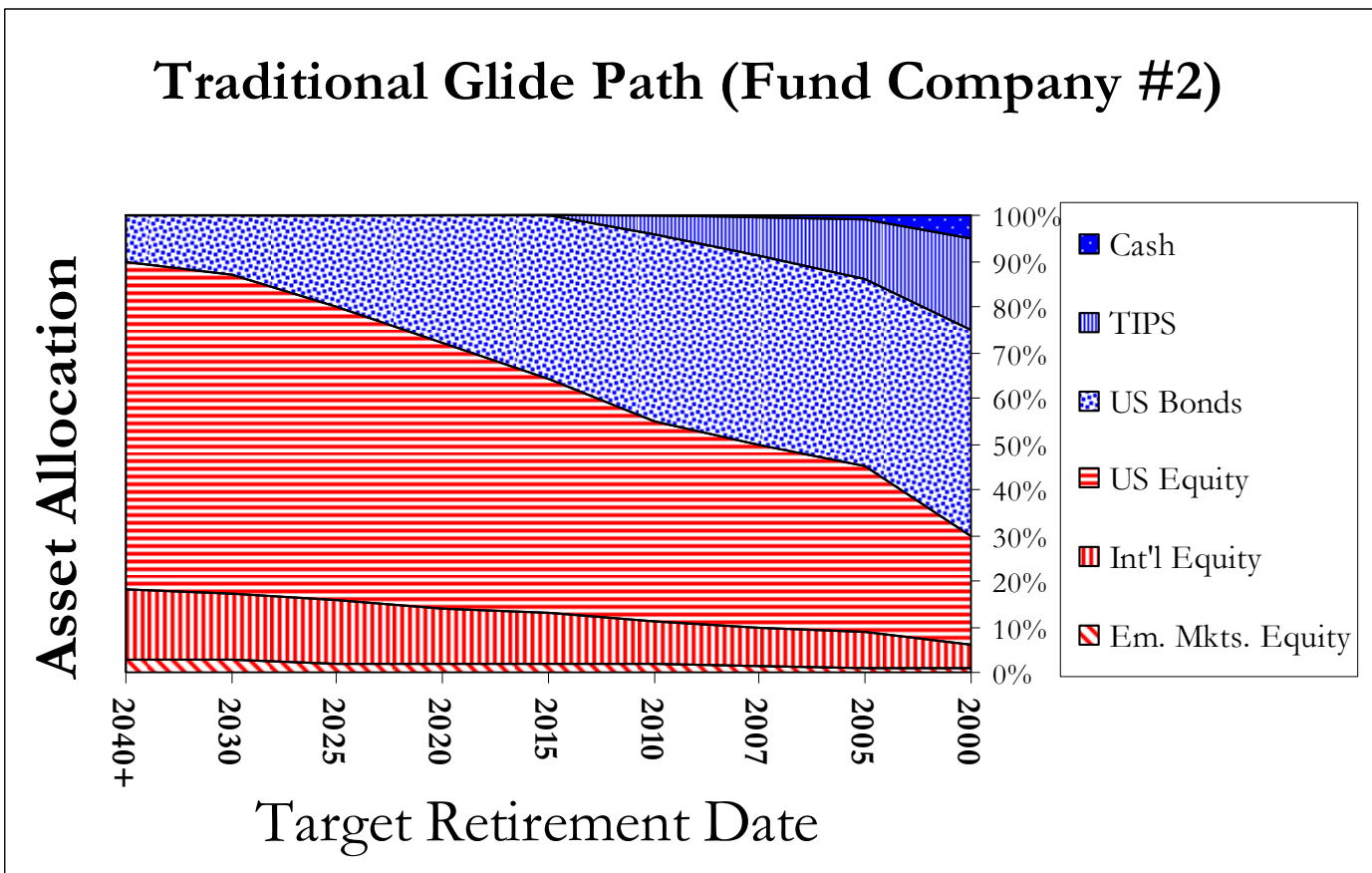


Exhibit 1

Competing Target Fund Allocation Strategies (Continued)



Reliance on the ‘Big Four’ Asset Classes

Like the three prominent target date fund companies evaluated in Exhibit 1, most target date funds bet heavily on the ‘big four’ asset classes. The ‘big four’ are (1) *Cash*, (2) *Intermediate US Investment Grade Nominal Bonds*, (3) *US Equities*, and (4) *Developed Foreign Equities*. The allocations among the ‘big four’ vary from one fund company to another, but they still garner the lion’s share of assets.

Relying so heavily on the ‘big four’ is dangerous because all are susceptible to many of the same risk factors. One of the biggest is the risk of unanticipated inflation, which creates a headwind for many financial assets. Unanticipated inflation also leads to unanticipated higher (nominal) retiree spending needs, creating a painful funding gap.

Rising Inflation and the ‘Big Four’ Asset Classes

US Nominal Investment Grade Bonds: Higher inflation usually results in higher long-term (& short-term) interest rates, which adversely affect bond prices.

US Equities and Foreign Equities: Higher inflation usually leads to contracting P/E ratios. At worst, this can drive down stock prices. At best, it is a formidable headwind for global stock prices.

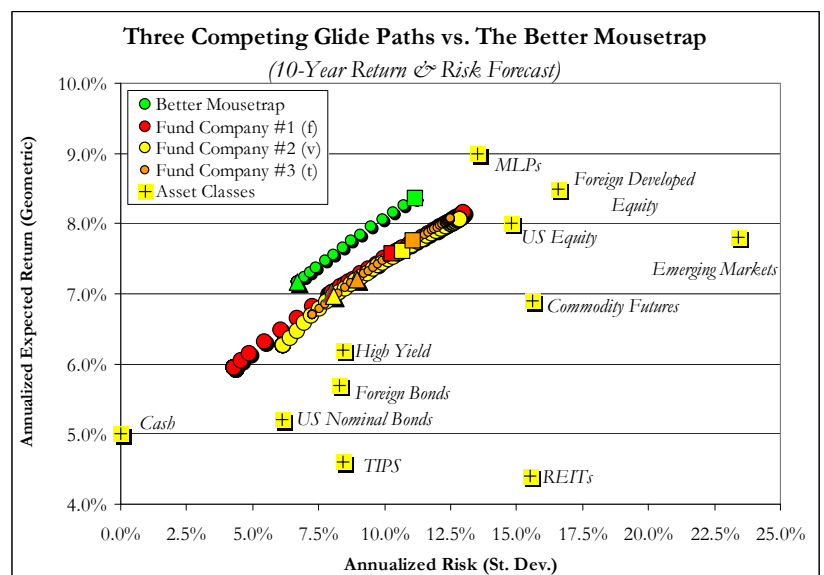
US Cash: T-Bill yields usually rise with inflation, but their real return (return above inflation) is frequently negative.

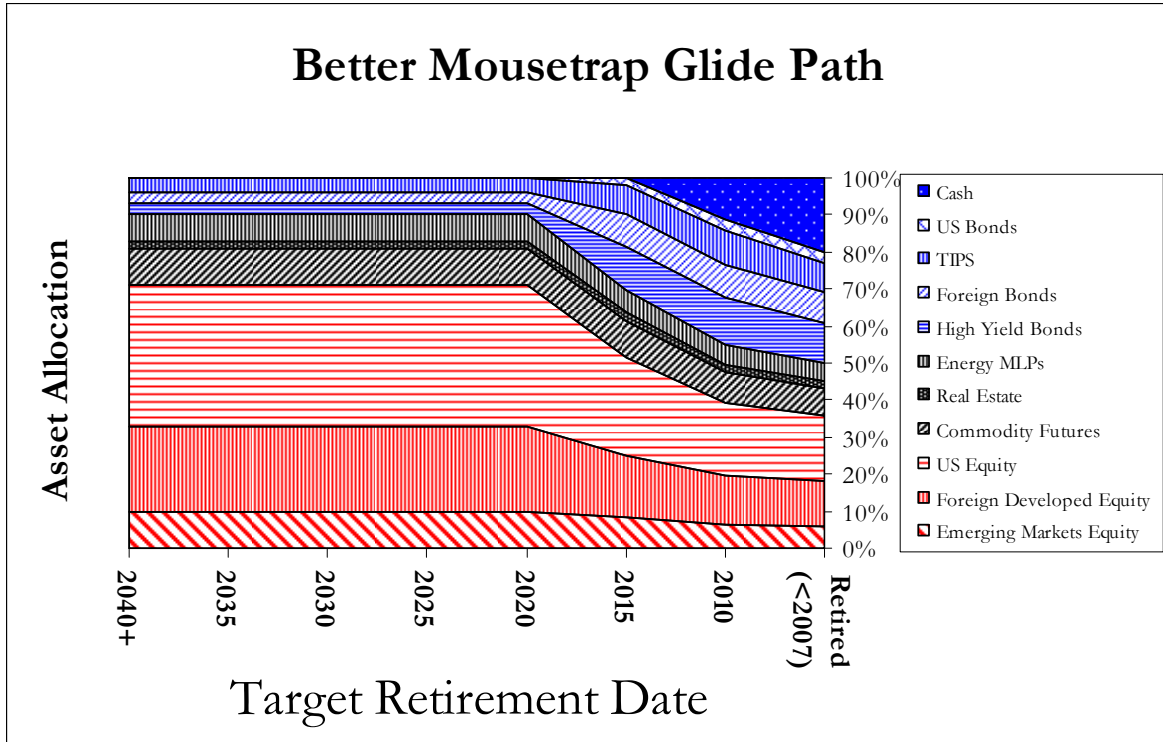
Diversifying Away From the ‘Big Four’ Asset Classes

“Tenets of portfolio theory compel rational investors to use low correlating investments in their portfolios to reduce volatility and increase returns.”

Lower risk not only dampens the magnitude of short-term losses, but also reduces the variability of outcomes over holding-period time horizons. Tenets of portfolio theory compel rational investors to use low correlating investments in their portfolios to reduce volatility and increase returns. While there are reasons to tolerate risk, there is no sound reason to seek it. Beyond the ‘big four’, other asset classes like *Inflation Protected Securities (TIPS)*, *High Yield Bonds*, *Foreign Bonds*, *Real Estate (REITs)*, *Emerging Market stocks*, *Commodity Futures*, and *Energy Infrastructure MLPs* can increase expected returns and lower expected risk when added to a diversified portfolio. See the following comparisons (in Exhibit 4) of expected returns and volatilities for the **better mousetrap** glide path¹.

Exhibit 4





¹The **better mousetrap** glide path portfolios were developed using DiMeo Schneider's Frontier Engineer™ asset allocation methodology (including 2007's 10-year capital market assumptions).

The Better Mousetrap Glide Path

*“The lower anticipated volatility of the **better mousetrap’s** longer-term mixes tightens the band between expected and pessimistic scenarios over the coming decades, thus delaying a roll down along the glide path to the lower expected return mixes.”*

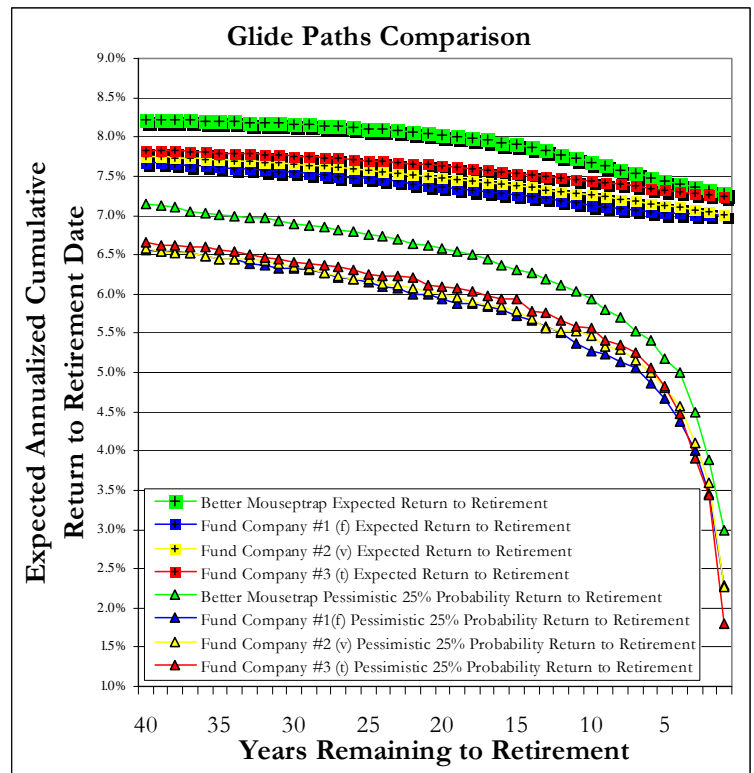
For retirement time horizons greater than thirteen years in the **better mousetrap** glide path¹, 10% is allocated to fixed income. The 10% is divided among TIPS (4%), Foreign Bonds (3%) and High Yield Bonds (3%). (See the **better mousetrap** glide path¹ summary in Exhibit 5 on the previous page). Noticeably absent in this ‘thirteen plus’ year mix is *US Nominal Investment Grade Bonds*. In decades where contracting P/E ratios (caused by rising inflation and interest rates) lead US equities to underperform, *US Nominal Investment Grade Bonds* are more likely to underperform TIPS or Foreign Bonds. The ‘thirteen plus’ year **better mousetrap** portfolio¹ also allocates 38% to *US Equities*, 23% to *Developed Foreign Equities*, and 10% to *Emerging Market stocks*. The remaining 19% is allocated among several real asset classes including *REITs*, *Commodity Futures* (collateralized by TIPS) & *Energy Infrastructure MLPs*. If TIPS are included, Real Assets make up 23% of the ‘thirteen plus’ year **better mousetrap** portfolio¹.

Exhibit 6 compares the expected cumulative return from now until the retirement date for the **better mousetrap** and three off-the-shelf target date funds. Virtually all of the assets are allocated to the ‘big four’ in the three off-the-shelf products. However, the **better mousetrap** allocates only 61% to the ‘big four’ in the ‘thirteen plus’ year model, and 53% in the Retirement Model. The broader allocation reduces the expected downside of the pessimistic (but very possible) scenarios for the capital markets.

While the added expected return and lower risk of **better mousetrap** allocations appear modest, there are several important effects. The lower anticipated volatility from the **better mousetrap’s** longer-term mixes tightens the band between expected and pessimistic scenarios over the coming decades, thus delaying a roll down along the glide path to the lower expected return mixes. Obviously, higher expected returns are preferred. Risk is controlled in the **better mousetrap’s** shorter-term funds by relying more on lower correlation investments rather than heavier allocations to low risk/low return investments (e.g., *Cash* and *US Investment Grade Nominal Bonds*).

See Exhibits 7 and 8 on the next page for a summary of historical returns and volatilities of the competing structures.

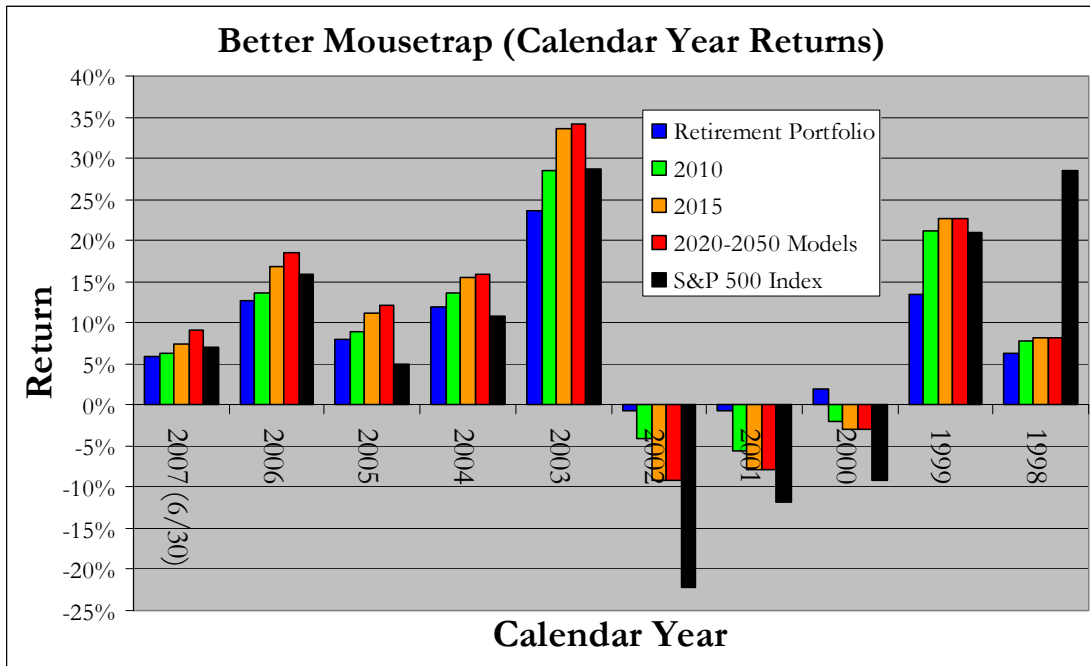
Exhibit 6



¹The **better mousetrap** glide path portfolios were developed using DiMeo Schneider's *Frontier Engineer™* asset allocation methodology (including 2007's 10-year capital market assumptions).

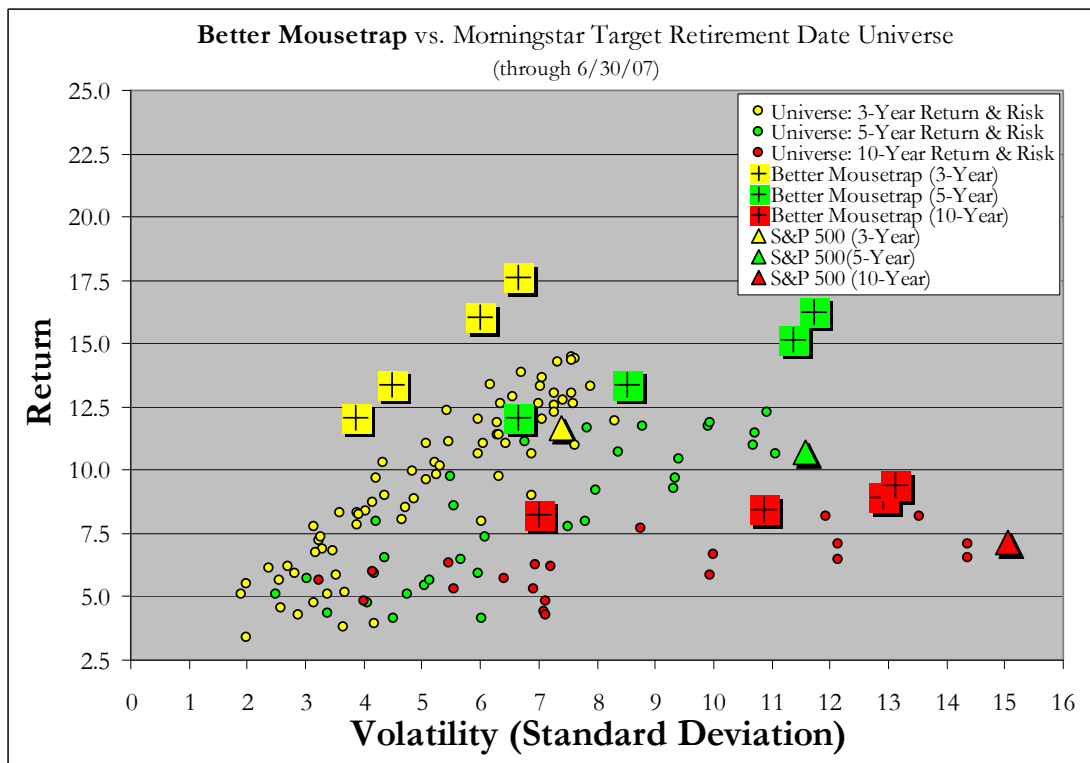
The Better Mousetrap Performance Summary

Exhibit 7



For illustrative purposes only. Historical returns for the better mousetrap glide path were calculated using a weighted-average return of market indexes. This assumes no fees and no underlying investment manager excess or underperformance. Past returns are no guarantee of future performance. A summary of market indexes used is in appendix.

Exhibit 8



For illustrative purposes only. Historical returns for the better mousetrap glide path were calculated using a weighted-average return of market indexes. This assumes no fees and no underlying investment manager excess or underperformance. Past returns are no guarantee of future performance. A summary of market indexes used is in appendix.

The Low Volatility Dividend

The **Low Volatility Dividend** demonstrates that diversification not only reduces risk, but also can increase a portfolio's expected long-term return even if the new investment does not have a higher expected return than the investment it replaced in the portfolio. How is it possible for a portfolio to have a higher expected return than the sum of its parts? The first step in understanding the **Low Volatility Dividend** is to differentiate *Arithmetic* and *Geometric* investment returns. Imagine that a \$100 portfolio loses 50% in year 1, then gains 50% in year 2. The average *arithmetic* return is 0% (the average of -50% and +50%). However, losing 50% in year 1 takes the \$100 portfolio down to \$50. Gaining 50% in year 2 brings it back up to \$75. So while the average *arithmetic* return was 0%, the portfolio lost \$25 (or -13.4% compounded per year). The average annual *geometric* return is -13.4%.

Exhibit 9:

Arithmetic vs. Geometric Returns:

Year 1 Return = -50%

Year 2 Return = 50%

Arithmetic return = $(-50\% + 50\%)/2 = 0\%$

Geometric return = $[(1 + -0.50)(1 + 0.50)]^{1/2} - 1 = -13.4\%$

The *arithmetic* and *geometric* returns are equal only when a portfolio has the same return every year (or no volatility of returns). Otherwise, the *geometric* return for any time period is always less than the *arithmetic* return. Moreover, the higher the volatility, the greater the difference between a portfolio's *arithmetic* and *geometric* annual returns. Investment losses drain a portfolio's long-term return more than investment gains of the same percentage boost it.

The *geometric* return of a portfolio can be estimated by subtracting $[(\text{standard deviation})^2/2]$ from the *arithmetic* return. If US stocks are

expected to generate a 10% annual *arithmetic* return with a 17% annual standard deviation, the annual *geometric* return is expected to be 8.6% $[10\% - (0.17)^2/2]$.

Therefore, any diversifying asset class that reduces a portfolio's volatility but maintains the same expected *arithmetic* return increases a portfolio's *geometric* returns... and retirees spend *geometric*, not *arithmetic* dollars.

There are various ways to control risk to capture the **Low Volatility Dividend** tailwind. Most off-the-shelf target date funds allocate heavily to bonds and cash. While this dampens volatility, the return drag creates a formidable headwind. The **better mousetrap** relies more on low correlating asset classes that reduce volatility, but without the return drag.

Exhibits 10-13 illustrate the **Low Volatility Dividend** and how the annual returns of the 'big four' asset classes compared to the additional asset classes included in the **better mousetrap** (i.e., *TIPS, REITS, Commodities, MLPs, Emerging Markets, High Yield Bonds & Foreign Bonds*).

Exhibit 10

Low Volatility Dividend Example (Five non-correlated simulated return streams)

Calendar Year	Asset #1	Asset #2	Asset #3	Asset #4	Asset #5	20% allocated to each; Rebalanced annually
Year 1	-10%	21%	32%	-9%	-6%	6%
Year 2	30%	27%	44%	17%	-5%	23%
Year 3	-10%	-4%	25%	9%	10%	6%
Year 4	-8%	2%	3%	19%	5%	4%
Year 5	35%	-13%	-5%	8%	31%	11%
Year 6	-3%	23%	2%	23%	30%	15%
Year 7	20%	1%	6%	13%	7%	9%
Year 8	6%	-17%	3%	-6%	40%	5%
Year 9	21%	22%	20%	-2%	25%	17%
Year 10	18%	41%	-33%	9%	-32%	1%
Annualized Return	8.7%	8.8%	7.4%	7.7%	8.3%	9.5%
Standard Deviation	17.0%	19.1%	21.7%	10.8%	21.7%	6.8%

Asset #2 was best 'solo' performer with 8.8% Return

As a team, they bested Asset #2 by 0.7% per year

The average return of each asset (in a vacuum) was 8.2%; **1.3% lower than the team!**

The average return of each asset (in a vacuum) was 8.2%; **1.3% lower than the combined team!**

The Low Volatility Dividend (Continued)

Exhibit 11
Large Cap US Stocks vs. Non-'Big Four' Asset Classes

Year	Large Cap US	Mean of non "big 4"	Excess return of non "big 4"	Commodity Futures	REITs	MLPs	TIPS	Emerging Markets	*Foreign Bonds	High Yield
2002	-22%	10%	32%	44%	3%	-3%	17%	-6%	14%	-1%
2001	-12%	7%	19%	-16%	10%	44%	8%	-2%	1%	6%
2000	-9%	14%	23%	41%	31%	46%	13%	-31%	3%	-4%
1981	-5%	-11%	-6%	-29%	7%	NA	NA	NA	NA	NA
1990	-3%	-2%	1%	31%	-33%	NA	NA	-11%	9%	-4%
1994	1%	-2%	-3%	9%	2%	-14%	NA	-7%	1%	-1%
2005	5%	11%	6%	21%	14%	6%	3%	35%	-2%	3%
1987	5%	10%	4%	20%	-8%	NA	NA	NA	22%	5%
1984	6%	13%	7%	6%	21%	NA	NA	NA	NA	NA
1992	8%	13%	5%	7%	7%	26%	NA	11%	7%	18%
1993	10%	27%	17%	5%	15%	33%	NA	75%	14%	17%
2004	11%	17%	7%	17%	35%	17%	8%	26%	9%	11%
2006	16%	16%	0%	-2%	36%	26%	0%	33%	5%	12%
1988	17%	23%	6%	30%	24%	NA	NA	40%	6%	13%
1979	19%	47%	28%	23%	71%	NA	NA	NA	NA	NA
1986	19%	17%	-2%	10%	20%	NA	NA	NA	21%	16%
1999	21%	11%	-10%	22%	-3%	-8%	2%	66%	-1%	2%
1982	22%	29%	7%	33%	24%	NA	NA	NA	NA	NA
1983	23%	22%	-1%	16%	28%	NA	NA	NA	NA	NA
1996	23%	17%	-6%	21%	37%	17%	NA	6%	8%	11%
1998	29%	-7%	-36%	-28%	-17%	-3%	4%	-25%	15%	4%
2003	29%	31%	2%	32%	37%	45%	8%	56%	10%	27%
1991	30%	24%	-7%	-1%	20%	14%	NA	60%	14%	35%
1989	32%	24%	-8%	46%	2%	NA	NA	65%	0%	4%
1985	32%	22%	-9%	24%	20%	NA	NA	NA	NA	NA
1980	32%	12%	-21%	2%	22%	NA	NA	NA	NA	NA
1997	33%	7%	-26%	-6%	20%	26%	NA	-12%	3%	13%
1995	38%	17%	-20%	29%	14%	27%	NA	-5%	19%	20%

Sorted from Worst to Best Year (1979 – 2006)

Large Cap US represented by the S&P 500 Index.
See appendix for summary of indexes used.
*Foreign Bonds are 50% currency hedged.

Exhibit 12

US Investment Grade Bonds vs. Non-'Big Four' Asset Classes

Sorted from worst year to best (1979 – 2006)

Calendar Year	US Investment Grade Bonds	Mean of non "big 4"	Excess return of non "big 4"	Commodity Futures	REITs	MLPs	TIPS	Emerging Markets	*Foreign Bonds	High Yield
1994	-3%	-2%	1%	9%	2%	-14%	NA	-7%	1%	-1%
1999	-1%	11%	12%	22%	-3%	-8%	2%	66%	-1%	2%
1979	2%	47%	45%	23%	71%	NA	NA	NA	NA	NA
2005	2%	11%	9%	21%	14%	6%	3%	35%	-2%	3%
1980	3%	12%	9%	2%	22%	NA	NA	NA	NA	NA
1987	3%	10%	7%	20%	-8%	NA	NA	NA	22%	5%
1996	4%	17%	13%	21%	37%	17%	NA	6%	3%	11%
2003	4%	31%	27%	32%	37%	45%	8%	56%	10%	27%
2006	4%	16%	11%	-2%	36%	26%	0%	33%	5%	12%
2004	4%	17%	13%	17%	35%	17%	8%	26%	9%	11%
1981	6%	-11%	-17%	-29%	7%	NA	NA	NA	NA	NA
1992	7%	13%	5%	7%	7%	26%	NA	11%	7%	18%
1988	8%	23%	15%	30%	24%	NA	NA	40%	6%	13%
1983	8%	22%	13%	16%	28%	NA	NA	NA	NA	NA
2001	8%	7%	-1%	-16%	10%	44%	8%	-2%	1%	6%
1998	9%	-7%	-16%	-28%	-17%	-3%	4%	-25%	15%	4%
1990	9%	-2%	-11%	31%	-33%	NA	NA	-11%	9%	-4%
1997	10%	7%	-2%	-6%	20%	26%	NA	-12%	3%	13%
1993	10%	27%	17%	5%	15%	33%	NA	75%	14%	17%
2002	10%	10%	-1%	44%	3%	-3%	17%	-6%	14%	-1%
2000	12%	14%	3%	41%	31%	46%	13%	-31%	3%	-4%
1989	15%	24%	9%	46%	2%	NA	NA	65%	0%	4%
1984	15%	13%	-2%	6%	21%	NA	NA	NA	NA	NA
1986	15%	17%	2%	10%	20%	NA	NA	NA	21%	16%
1991	16%	24%	8%	-1%	20%	14%	NA	60%	14%	35%
1995	18%	17%	-1%	29%	14%	27%	NA	-5%	19%	20%
1985	22%	22%	0%	24%	20%	NA	NA	NA	NA	NA
1982	33%	29%	-4%	33%	24%	NA	NA	NA	NA	NA

US Investment Grade Bonds represented by Lehman Aggregate Bond Index
See appendix for summary of indexes used.
*Foreign Bonds are 50% currency hedged.

Exhibit 13

Foreign Developed Stocks vs. Non-'Big Four' Asset Classes

Sorted from worst year to best (1979 – 2006)

Calendar Year	Foreign Stocks (Developed)	Mean of non "big 4"	Excess return of non "big 4"	Commodity Futures	REITs	MLPs	TIPS	Emerging Markets	*Foreign Bonds	High Yield
1990	-23%	-2%	22%	31%	-33%	NA	NA	-11%	9%	-4%
2001	-21%	7%	28%	-16%	10%	44%	8%	-2%	1%	6%
2002	-16%	10%	25%	44%	3%	-3%	17%	-6%	14%	-1%
2000	-14%	14%	28%	41%	31%	46%	13%	-31%	3%	-4%
1992	-12%	13%	25%	7%	7%	26%	NA	11%	7%	18%
1981	-1%	-11%	-10%	-29%	7%	NA	NA	NA	NA	NA
1982	-1%	29%	30%	33%	24%	NA	NA	NA	NA	NA
1997	2%	7%	5%	-6%	20%	26%	NA	-12%	3%	13%
1979	6%	47%	41%	23%	71%	NA	NA	NA	NA	NA
1996	6%	17%	10%	21%	37%	17%	NA	6%	8%	11%
1984	8%	13%	6%	6%	21%	NA	NA	NA	NA	NA
1994	8%	-2%	-10%	9%	2%	-14%	NA	-7%	1%	-1%
1989	11%	24%	13%	46%	2%	NA	NA	65%	0%	4%
1995	12%	17%	6%	29%	14%	27%	NA	-5%	19%	20%
1991	12%	24%	11%	-1%	20%	14%	NA	60%	14%	35%
2005	14%	11%	-3%	21%	14%	6%	3%	35%	-2%	3%
1998	20%	-7%	-28%	-28%	-17%	-3%	4%	-25%	15%	4%
2004	21%	17%	-3%	17%	35%	17%	8%	26%	9%	11%
1980	24%	12%	-13%	2%	22%	NA	NA	NA	NA	NA
1983	25%	22%	-3%	16%	28%	NA	NA	NA	NA	NA
1987	25%	10%	-15%	20%	-8%	NA	NA	NA	22%	5%
2006	27%	16%	-11%	-2%	36%	26%	0%	33%	5%	12%
1999	27%	11%	-16%	22%	-3%	-8%	2%	66%	-1%	2%
1988	29%	23%	-6%	30%	24%	NA	NA	40%	6%	13%
1993	33%	27%	-6%	5%	15%	33%	NA	75%	14%	17%
2003	39%	31%	-8%	32%	37%	45%	8%	56%	10%	27%
1985	57%	22%	-34%	24%	20%	NA	NA	NA	NA	NA
1986	70%	17%	-53%	10%	20%	NA	NA	NA	21%	16%

Foreign Developed Stocks represented by the MSCI EAFE Index.
See appendix for summary of indexes.

Financing Retirement Spending Needs

“Exposure to real assets and other non-‘big four’ asset classes reduces the spread between expected and pessimistic outcomes, and increases the probability of funding retirement needs.”

Insufficient diversification of most off-the-shelf target date funds results in greater expected risk over longer horizons and lower expected returns over shorter horizons - far from the ideal. By comparison, the **better mousetrap’s** additional asset classes allow it to seek greater returns over long and short horizons while reducing risk. Required disclaimer: There is no guarantee of this result in all economic conditions.

Modestly increasing expected returns and lowering expected volatility is a powerful combination. Exposure to real assets and other non-‘big four’ asset classes in the **better mousetrap** reduces the spread between expected and pessimistic outcomes, and increases the probability of funding retirement needs (See Exhibits 15, 16 and 17). By contrast, the higher expected volatility of off-the-shelf funds forces them to roll down to lower expected return mixes earlier, greatly increasing opportunity costs. Furthermore, the opportunity to increase a portfolio’s Sharpe Ratio (return per unit risk) with better diversification improves at lower risk levels.

Fund Company #2’s 2000 Fund (7 years post-retirement mix) has a 0.5% lower expected standard deviation, but also a 0.9% expected lower return than the **better mousetrap**. A 1-in-20 worse case (annual) event for the **better mousetrap’s** 2000 portfolio is a 3.8% loss, compared to a 3.9% loss for Company #2’s 2000 fund. The added incremental +0.9% expected return of the **better mousetrap** is expected to offset the modestly higher 0.5% volatility, even during a 1-in-20 year left-tail event.

2000 Funds	E(Return)	E(Risk)	1-in-20 year event
Company #2	6.3%	6.2%	-3.9%
Better Mousetrap	7.2%	6.7%	-3.8%

Exhibit 14

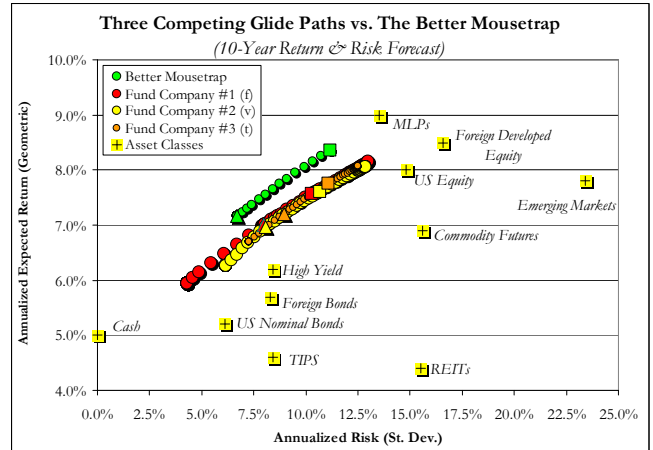


Exhibit 15

Scenario Assumptions:

- 1) Initial Age: 25 (40 years from retirement)
- 2) Initial Salary: \$40,000
- 3) Initial Account Balance: \$0
- 4) Savings Rate: 5% (\$2,000 in year 1)
- 5) Annual Salary & Savings Increases (CPI): 3%
- 6) Final Year of Salary: \$138,482
- 7) Salary Replacement: 40% of final year (+3% per year)

Exhibit 16

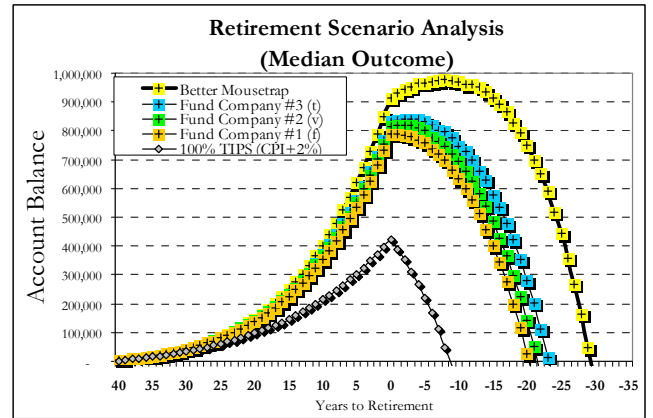
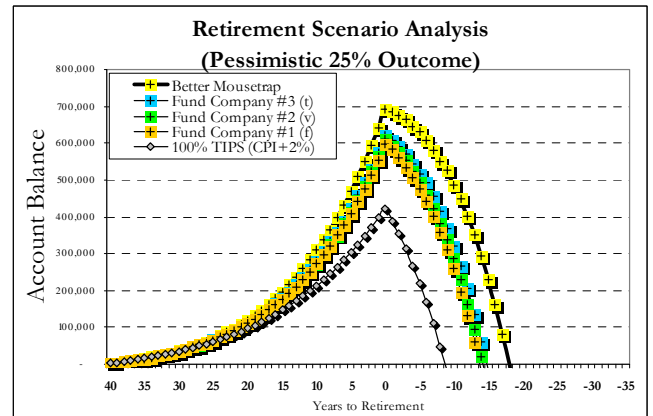


Exhibit 17



Building versus Buying

'Best'-in-Breed or Merely 'Good-Enough'-in-Breed?

Plan sponsors who are good fiduciaries seek best-in-breed 401(k) menus, picking from multiple fund companies. By contrast, off-the-shelf target date funds are restricted to the fund company's proprietary investments. By definition, this constraint prevents them from ever being a best-in-breed solution. It would be unlikely to find a Vanguard Fund in a Fidelity Freedom Fund.

A primary economic incentive of off-the-shelf target date funds is to distribute underlying fund product. Thoughtful allocation is not a prime incentive. For example, Fidelity used to charge a 0.07% fee for the asset allocation services in the Fidelity Freedom Funds. Bowing to pressure from clients, Fidelity eventually eliminated the fee. While lower fees are desirable, this removes any debate about where the incentives lie. Revenues from the fund products clearly subsidize the asset allocation process.

Moreover, because the underlying investment products have various expenses and profitability, target date fund managers can face potential conflicts of interest. A fund company's revenues are contingent on the underlying funds employed. Stock funds usually provide higher revenue than bond funds. Cash vehicles usually have the lowest expenses. There is a disincentive to use low-cost index funds, even in highly efficient categories. Off-the-shelf target date funds are products designed to increase fund company assets under management. By contrast, custom target funds are solutions designed to improve the retirement lives of plan participants.

Some insurance company target date fund products use outside sub-advisors. However, revenue sharing arrangements lead to a different kind of conflict.

"Off-the-shelf Target Date funds are restricted to the fund company's proprietary investments. By definition, this constraint prevents them from ever being a best-in-breed solution".

Advances in recordkeeping technology allow an independent asset allocation expert to create appropriate mixes (and glide paths), and to use the 401(k) menu's best-in-breed core funds in custom target date funds. The potential benefits can be meaningful.

Benefits of Custom Target Date Structure:

Exhibit 18

- ✓ Broader and potentially better asset allocations. Portfolio construction is not constrained by a single fund company's offerings (or lack of offerings).
- ✓ Best-in-breed managers. Under performers are easily replaced.
- ✓ Low cost institutional mutual funds.
- ✓ A conflict-free asset allocation.
- ✓ Thoughtful blend of active and low-cost passive management.
- ✓ Use of your 401(k) plan's stable value fund in target date funds instead of a money market.
- ✓ Use of commingled funds or separate accounts (where fees can be negotiated) to broaden the universe of quality institutional managers.
- ✓ Customize the glide path based on the unique situation for your plan's participants (i.e., whether DB benefits are offered, high/low average account balances and savings rates, etc.)
- ✓ Incorporate additional investment vehicles beyond mutual funds. (i.e., structured notes, exchange-traded funds, etc.)

Building versus Buying (continued)

“Cost conscious plan sponsors can build custom target funds with expenses ranging from 0.20% to 0.45% (depending on the use of active and passive management). Cost savings alone is a compelling reason to consider custom funds.”

Target Date Funds Can Be Pricey

The expense ratios range from 0.93% for closer target dates to 0.97% for longer target dates. See Exhibits 19-22 for a summary of expense ratio distributions for off-the-shelf funds.

Exhibit 19

Target Retirement Date Funds Expense Comparisons*

Target Funds	Number*	Average	<-Less Expensive - - - More Expensive ->				
			5%	25%	Median	75%	95%
2000-2014	60	0.89	0.21	0.70	0.93	1.02	1.26
2015-2029	67	0.95	0.32	0.77	0.95	1.13	1.36
2030+	91	0.95	0.21	0.81	0.97	1.18	1.39

**Morningstar Distinct Share class only*

The higher expense for the longer horizon funds is due to heavier allocations to equities, which tend to have higher expenses than bond funds. With a custom approach, it is possible to build superior mixes at a fraction of the cost. Cost conscious plan sponsors can build custom target funds ranging from 0.20% to 0.45% (depending on the use of active and passive management). Cost savings alone is a compelling reason to consider custom funds. *“Past performance is a poor predictor of future performance”*; however, past expenses are a good predictor of future expenses.

Recordkeeping and Unitization Expenses

Most quality recordkeepers are capable of unitizing custom funds or creating “virtual funds” (model portfolios at the participant level). Rebalancing and managing cash flows can be automated. In recent years, recordkeeping costs for this kind of specialization have come down dramatically. Based on our experience, it can be feasible to build custom target models (at the participant level) for plans as small as \$10 million. Unitized target funds may be economically feasible for plans with as little as \$20 million (depending on the recordkeeper).

Exhibit 20

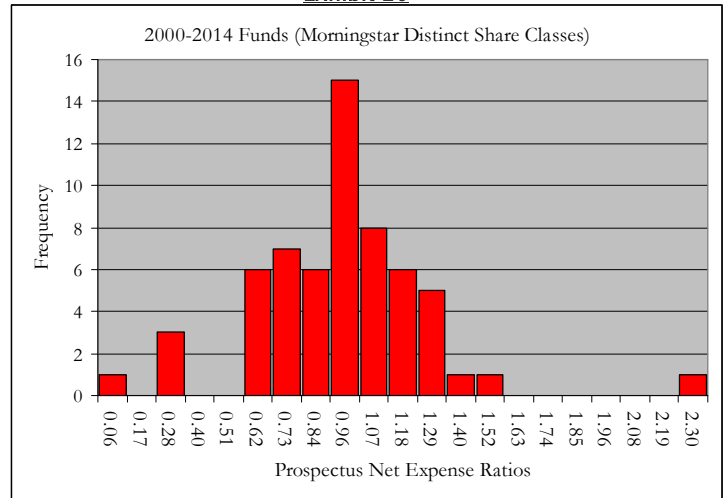


Exhibit 21

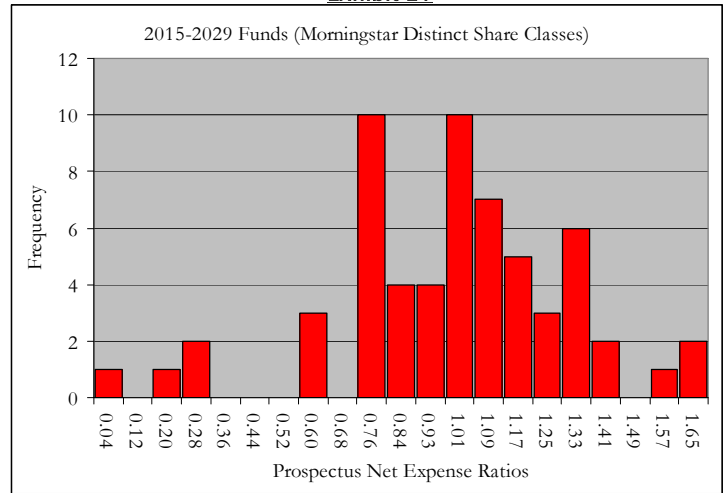
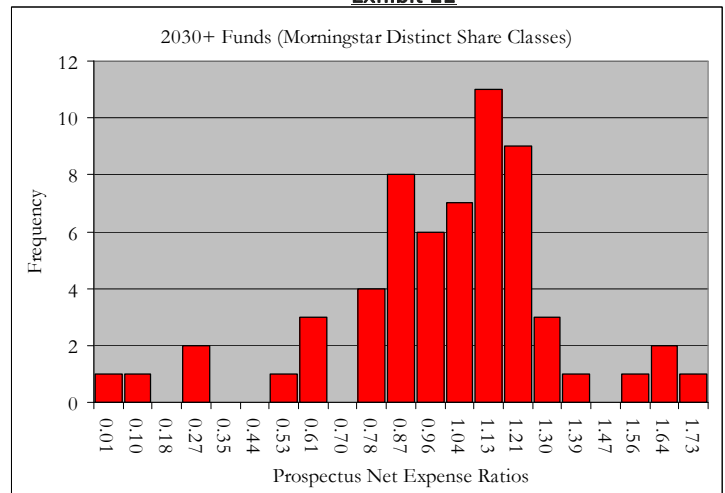


Exhibit 22



Conclusion

Custom target date funds offer the flexibility to use additional asset classes to improve diversification and the flexibility to use best-in-breed underlying managers. They also afford the opportunity to blend active and passive management, use stable value funds instead of money market funds, and dramatically lower overall expenses.

Unlike the **better mousetrap**, most target date funds have suboptimal glide paths because of their limited diversification opportunity set. Because they bet on the 'big four' asset classes, many are forced to seek risk at longer horizons and seek low returns at shorter horizons.

“Responsible plan sponsors should consider custom structures as target date funds continue to gain prominence.”

The higher risk forces these funds to start rolling down the glide path earlier. By contrast, the improved diversification allowed by a **better mousetrap** custom structure allows for a delay in rolling down the glide path and improves the probability that your participants will be able to fund their retirement spending needs.

Responsible plan sponsors should consider custom structures as target date funds continue to gain prominence.

For more information on the **better mousetrap** or building custom target date funds, contact Matthew Rice or your consultant at 312-853-1000 or mrice@dimeoschneider.com.

About the author:



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*As Chief Research Officer, Matt spearheads the firm’s research efforts in the areas of capital market analysis, investment strategy, asset allocation modeling, portfolio rebalancing, and alternative investments. He is also a member of the DiMeo Schneider & Associates, L.L.C. investment committee. In 2004, he co-authored *The Practical Guide to Managing Nonprofit Assets* (John Wiley & Sons). Matt received a BA in Economics from Northwestern University, is CFA Charter holder (Chartered Financial Analyst), a CIMA (Certified Investment Management Analyst) and a CIMC (Certified Investment Management Consultant).*

Appendix

10-Year Return, Risk & Correlation Forecast Assumptions (2007 - 2016)

ASSET CLASS	Expected Arithmetic Return	Expected Geometric Return	Expected Risk (σ)	Debt, Equity or Alternative		Cash	TIPS	US Bonds	Int'l Bond	HY Bond	US Equity	REITs	Int'l Equity	Em. Mkts. Equity	Commodity Futures	MLPs
Cash	5.0%	5.0%	0.0%	D	Cash	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TIPS	5.0%	4.6%	8.4%	D	TIPS	0.00	1.00	0.77	0.54	0.05	-0.18	0.11	-0.17	-0.11	0.46	0.18
US Bonds	5.4%	5.2%	6.1%	D	US Bonds	0.00	0.77	1.00	0.48	0.33	0.24	0.22	0.16	-0.05	0.34	0.24
Int'l Bond	6.0%	5.7%	8.3%	D	Int'l Bond	0.00	0.54	0.48	1.00	0.08	0.00	-0.02	0.42	0.00	0.21	0.14
HY Bond	6.6%	6.2%	8.4%	D	HY Bond	0.00	0.05	0.33	0.08	1.00	0.50	0.43	0.36	0.43	0.01	0.46
US Equity	9.1%	8.0%	14.8%	E	US Equity	0.00	-0.18	0.24	0.00	0.50	1.00	0.55	0.57	0.59	0.14	0.26
REITs	5.6%	4.4%	15.5%	E	REITs	0.00	0.11	0.22	-0.02	0.43	0.55	1.00	0.38	0.37	0.16	0.33
Int'l Equity	9.9%	8.5%	16.6%	E	Int'l Equity	0.00	-0.17	0.16	0.42	0.36	0.57	0.38	1.00	0.58	0.18	0.23
Em. Mkts. Equity	10.5%	7.8%	23.4%	E	Em. Mkts. Equity	0.00	-0.11	-0.05	0.00	0.43	0.59	0.37	0.58	1.00	0.10	0.28
Commodity Futures	8.1%	6.9%	15.6%	A	Commodity Futures	0.00	0.46	0.34	0.21	0.01	0.14	0.16	0.18	0.10	1.00	0.25
MLPs	9.9%	9.0%	13.5%	A	MLPs	0.00	0.18	0.24	0.14	0.46	0.26	0.33	0.23	0.28	0.25	1.00

ARITHMETIC RETURN: Sum of expected annual returns for next 10 years divided by 10. GEOMETRIC RETURN: A measure of central tendency by taking the product of (1+ annual percent return) for ten years to the 1/10th power, then subtracting 1. Geometric Returns ~ Arithmetic Returns - (Portfolio Variance / 2).

Index Proxies

Asset Class	Dates Used	Index
Cash	1/1979-12/2006	Citigroup 3-month T-Bill
Large Cap	1/1979-12/2006	S&P 500
Intl Equity	1/1979-12/2006	MSCI EAFE
REIT	1/1979-12/2006	DJ Wilshire Real Estate Sec.
HY Bond	11/1984-12/2006	Merrill Lynch High Yield Master
Intl Bond (H)	1/1985-12/2006	Citigroup Foreign Bond (H)
Intl Bond (UH)	1/1985-12/2006	Citigroup Foreign Bond (UH)
Em. Mkt. Eq.	1/1988-12/2006	MSCI Emerging Markets Free
TIPS	3/1997-12/2006	Citigroup Inflation-Linked Securities
Interm Bd	1/1979-12/2006	Lehman Aggregate Bond Index
TIPS/Commodities	1/1991-12/2006	DJ AIG Commodity Index + Citi Inflation-Linked Secur(97-04) & Lehman Agg(before 97-91) - Citigroup 3-Month T-Bill. Prior to 1991, Goldman Sachs Commodity Index + Lehman Agg - Citigroup 3-Month T-Bill
MLPs	1/1991-12/2006	Alerian MLP Index (1/96 - 5/06), Atlantic MLP Index (1/1991-12/1995)