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A Better Approach to Target Date Strategies

Executive Summary

In 2007, *Folio Investing* undertook an analysis of Target Date Funds to determine how these investments might be improved. As a result of that analysis we identified a number of enhancements that our research suggested would improve performance and reduce risk. Specifically, our research suggested that many Target Date Funds were not well diversified, were exposing investors to unnecessarily high levels of risk and were expensive. We believed it was possible to build better-diversified, risk-managed portfolios at lower cost. In addition, we believed a "one-size-fits-all" approach – that all investors with a specific target date should have the same risk-level -- was not serving investors well and that target date vehicles needed to be more customized: at the very least, they needed to reflect risk levels of conservative, moderate and aggressive. Finally, we believed that a wholly static approach to designing these investment vehicles, with the assumption that external factors are irrelevant, was inappropriate; instead, periodic examination to take into account changes in asset class correlations or volatilities was needed.

As a result we created a series of Target Date *Folios* (model portfolios to which investors can subscribe). The Target Date Folios were launched on the *Folio Investing*[1] brokerage platform at the end of 2007.

As of the end of 2010, we have three years of performance data for the Target Date Folios. Over this three year period, the most challenging in recent decades, the Target Date Folios have vindicated our research findings. **The Target Date Folios have substantially out-performed the universe of traditional Target Date Funds.** The Target Date Folios are available in three risk levels (Conservative, Moderate, and Aggressive) and the Moderate Folios, designed for average investors, provide a good baseline for comparison. To provide a stress test that would represent fees that might be faced in a very small retail portfolio or a small 401(k) plan, we applied a penalty to the Target Date Folios of 1% in performance per year. Even in this high "other" fee case, over the past three years:

- Only one 2040 Target Date Fund would have out-performed the *2040 Moderate Target Date Folio*;
- No 2030 funds would have out-performed the *2030 Moderate Folio*;
- Only one 2020 fund would have out-performed the *2020 Moderate Folio;* and

[1] https://www.folioinvesting.com/rtg/category.jsp?category=Target%20Date

- Although seven 2010 funds (out of a total of 22) would have out-performed the *2010 Moderate Folio*, only one would have out-performed the *2010 Conservative Folio*.

Looking at annualized returns (and with the 1% per-year penalty still applied), the 2010, 2020, 2030, and 2040 Moderate Folios out-performed the Target Date Funds in each of these categories by an average of 2% per year. The real impact to an investor is highly significant.[1]

The costs of investing in the Target Date ***Folios*** within an ***advised*** 401(k) plan are similar to industry averages for Target Date ***Funds*** in ***non***-advised 401(k) plans, so the observed Target Date Folio out-performance cannot be explained on the basis of the higher expenses of funds in qualified plans.

These Target Date Folios are openly available, like the other pre-designed portfolios, on the **Folio Investing** platform for individual investors and the **Folio Institutional** platform for investment advisors. The Target Date Folios also form a foundation of the recently offered Folio(k) program – an alternative to traditional 401(k) plans.

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[1] As an example, a 2% performance drag for a person who invests $5,000 per year for 35 years would reduce his account balance at retirement from $665,485 to $430,820 – a difference of $234,665 or 35%. This assumes an average return of 7% per year, and is based on compounding, but does not account for risk. The example does not represent any particular investment, nor does it account for inflation. Of course, past results are not indicative of future returns.

Also by way of example, the Department of Labor has estimated that a 1% decline in annual return over an investor's working lifetime could lead to a reduction of 28% in total wealth at retirement.

Background

In late 2007, FOLIO*fn* Investments Inc. launched a series of Target Date investments. These *Target Date Folios* were designed from the start to compensate for shortcomings which our research identified in other Target Date investments.

Target Date Funds were first launched in 1994 by mutual fund companies to provide a solution to investors' difficulties in allocating their retirement savings. In the modern system of retirement savings individuals are often entirely responsible for funding their retirements, and for determining how to invest that money. With Target Date Funds, an investor invests in a single fund designed for someone with the inivestor's intended retirement date. As the target date nears, the fund's holdings become more conservative. Based in part on their promise of being a better investment vehicle for retirement plans, these types of investments began to be offered as a "default" vehicle in 401 (k) plans following the Pension Protection Act of 2006, which also allowed 401(k) plans to enroll employees automatically into such default options (i.e., switching to an "opt-out" as opposed to requiring employees to "opt-in").

Target Date Funds were put to an unexpectedly severe test during the stock market meltdown of 2008. After many Target Date Funds fell much further than expected, and some 2010 Target Date Funds fell even further than the stock market itself during that market collapse, questions were asked about how well investors really understood the structure of these investments and whether these funds were, in fact, a suitable choice for the average investor. Now, regulators -- including the Securities and Exchange Commission and the Labor Department's Employee Benefits Security Administration -- are looking into new requirements for the funds, which have grown to hold over a quarter trillion dollars in total assets.

The topics the SEC is now tackling are ones Folio Investing has been focused on over the past half decade. By 2007, the firm had undertaken an extensive evaluation of Target Date Funds and their underlying asset allocations, in order to address what it saw as the need for a next-generation offering. That research suggested that Folio could take Target Date diversification to a new level, and that it would be possible to offer something truly unique: lower-risk, more-customized, and lower-cost alternatives that actually performed better.

A Better Way

The fundamental premise for the Target Date Folios is to build highly-diversified low-cost asset allocations for a range of risk levels. We have found that ETFs allow us to meet this goal with the additional benefit of a high degree of transparency while also keeping expenses low – consequently, the building blocks of the Target Date Folios are exclusively registered investment companies (specifically, ETFs). The design of the asset allocations is driven by a diverse body of research into portfolio construction.

Basic Features

Much has been written about the "through or to" question with regard to Target Date Funds. Specifically, should Target Date vehicles be designed with the assumption that an investor will hold the Target Date vehicle only "to" the retirement date and then take all their money out? Or, will that investor continue to hold the Target Date investment "through" an assumed retirement period, drawing income during that period but no longer making contributions. The Target Date Folios, like the Target Date Funds offered by major fund families, are designed to take you "through"[i] their target date and into retirement, as opposed to "to" their target date, and our current disclosures clearly state that.

Building on this, the specific risk levels for a given Target Date Folio are based on a number of assumptions. We assume, for example, that an investor will invest regularly in the appropriate Target Date Folio through their working years, not make any contributions to the Folio after retirement, and draw an annual inflation-adjusted income from the Folio in each year after the expected retirement date. There is no "end date" designed into the Folio: They were designed to provide income assuming an 80% probability the investor would hold them through a 30-year retirement, but that the investor could live longer as well.

Like other Target Date offerings, we adjust these portfolios' investments over the years to provide a changing balance of performance and volatility (the "glide path"). The Target Date Folios are also reviewed annually to determine whether their glide path and the asset allocation implied thereby still makes sense, given changing overall market dynamics. All changes are published on our website for use by investors.

The design of the Targets Date Folios reflects our intention to maintain an appropriate risk-defined balance of performance and volatility. The Folios are designed with the goal of providing high sustainable income for an extended retirement, while reducing risk over time to reflect the evolving risk tolerance of people as they age.

The Folios Have Outperformed[2]

The asset allocation framework used in designing the Folio will look familiar to those who are familiar with institutional research, but the resulting portfolios are unusual when compared to the universe of Target Date Funds. The performance of these Folios over the first three years of their existence substantiates the potential value of our approach.

Cumulative Three-Year Results

The cumulative three-year returns (through December 2010) for the 2010, 2020, 2030, and 2040 Target Date Folios are shown in Appendix A, along with the returns of the universe of Target Date Funds with these same retirement dates.

The Target Date Folios have substantially out-performed the vast majority of traditional Target Date Fund offerings in the three-year period through 2010. Of course, three years is not a long enough track record to be definitive, but we believe these results are at least indicative that our approach has merit.

The performance figures in Appendix A do not reflect certain costs that investors may incur. Specifically, we have not attempted to include the effects of loads (where applicable on some of the Target Date Mutual Fund offerings), advisors' fees or brokerage fees. To implement the Target Date Folios at Folio Investing, for example, brokerage fees will apply. Both loads and brokerage fees will reduce an investor's realized total return. We will examine both raw results and results with inclusion of estimated brokerage fees. The total impact of brokerage fees and the bid-ask spread is estimated in Appendix B.

The Target Date Folios have out-performed almost every comparable mutual fund in the Target Date Fund universe. While Folio has three risk levels for each target date ("conservative," "moderate," and "aggressive"), the Moderate folio is our baseline design for an 'average' investor. As such, this is the most relevant Folio to compare to the universe of funds.

- For the 2010 funds, the 2010 Moderate Folio has out-performed all but two funds over the three year period.
- For 2020, the Moderate Folio has out-performed every mutual fund with this target date.
- For 2030, the Moderate Folio has out-performed every mutual fund with this target date.
- For 2040, the Moderate Folio has out-performed every mutual fund with this target date.

These results are before we account for brokerage costs. Folio Investing's brokerage costs are applied as a fixed monthly or annual fee. For this reason, the effective impact of the brokerage

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[2] As with any investment, investments in Target Date Folios are subject to investment risk including the loss of the principal amount invested. Investors should consider the investment objectives and risks of the Target Date Folios before investing. For more information regarding the Target Date Folios, please visit our website at www.FolioInstitutional.com.

fee will vary with the size of an investor's portfolio. An individual investor with $100,000 invested will incur an effective 0.29% expense due to brokerage, while an investor with $50,000 invested will incur an effective 0.58% expense. If we examine an extreme case in which an investor incurs a 1% drag due to brokerage expenses and bid-ask spread, how do the rankings of performance change?

- Seven 2010 funds (out of a total of 22) would have out-performed the 2010 Moderate Folio over the past three years.
- One 2020 fund would have beaten the 2020 Moderate Folio.
- No 2030 funds would have out-performed the 2030 Moderate Folio.
- One 2040 fund would have out-performed the 2040 Moderate Folio

The 2010 Moderate is clearly our relative low performer (although this Folio has returned an annualized 2.7% over the three year period), managing only to make it into the top third of funds after we assume a 1% drag due to brokerage and other costs that investors may incur, depending upon whether the Folios are used in a 401(k) plan, how large the plan is, etc. For the other Folios, the extremely high ranking persists. Why do we see this substantial disparity? As the target date approaches, the risk and, subsequently, the expected return of a portfolio decrease. For this reason, the relative impact of any expenses or other performance drag becomes magnified.

Thus far, we have discussed the Folio performance without regard to the type of account in which these Folios are held. In an employer-sponsored account such as a 401(k), there are additional expenses, in addition to brokerage fees and expenses in the underlying funds. Two well-known studies have examined the all-in costs of 401(k) plans. The first, from the Department of Labor (DOL), estimates that the average all-in cost of 401(k) plans with more than 100 participating employees is 0.99% to 1.1%[3]. Plans with fewer than 100 participants averaged 1.3% to 1.4% in all-in expenses. A 2008 survey of plan sponsors, paid for by the Investment Company Institute and executed by Deloitte, found that the average reported all-in cost of 401(k) plans was 0.93%[4]. As with the DOL study, Deloitte found that the number of plan participants was a major driver of costs. Plans with fewer than 100 participants averaged 2.03% per year in all-in expenses. The Target Date folios are available within 401(k) plans, with all-in expenses as low as 1.0% (this includes the expenses of the underlying ETFs, advisor fees, the brokerage fees, and custody and administrative costs), depending on the number of plan participants and the total amount of assets in the plan. As such, the relative out-performance of the Folio approach is relevant to both individual investors and participants in 401(k) plans.

Annualized Results

When we calculate annualized returns, we find that:

- The *2010 Moderate Folio* has out-performed the average 2010 mutual fund by 1.95% per year before we account for brokerage fees.
- The *2020 Moderate Folio* has out-performed the average 2020 mutual fund by 2.83% per year before brokerage fees.

[3] http://www.dol.gov/ebsa/pdf/401krept.pdf

[4] http://www.ici.org/pdf/rpt_09_dc_401k_fee_study.pdf

- The *2030 Moderate Folio* has out-performed the average 2030 mutual fund by 4.05% per year before brokerage fees.
- The *2040 Moderate Folio* has out-performed the average 2040 mutual fund by 3.77% per year before brokerage fees.
- Even if we assume a 1% reduction in return per year due to brokerage costs, the performance advantage of the Folios remains substantial.

For investors, over the long term every percentage of performance compounds to have a sizeable impact. The Department of Labor has estimated that a 1% decline in annual return over an investor's working lifetime could lead to a reduction of 28% in total wealth at retirement.[ii] A 1% increase in return has a similar outcome in dramatically increasing lifetime wealth accumulation. Our own calculations support this level of impact.

Design Features

While we believe that the performance of the Target Date Folios tends to validate our design process, we feel that the underlying design considerations are at least as important as the performance to date.

Target Date Folios provide enhanced *Diversification*

In our 2007 analysis of existing Target Date Mutual Funds, we found that Target Date Funds on the market at that time were not very well diversified. When examined, some of the leading Target Date Funds, for example, very closely tracked the performance of the S&P 500. (A number of the providers have since moved toward increased diversification.)

Effective diversification has less to do with how many holdings a fund has, and more to do with how those holdings perform in relation to each other. In building the investments for the Target Date Folios, assets were included that in the past have proven to be good offsets to one another's movements. In some cases, specific industries were selected in order to generate the highest possible diversification benefit.

Target Date Folios Adapt to Significant Market Variances

Since retirement funds are intended to be held by many investors for a very long time, they should be designed to adjust when allocations have drifted away from their original targets. It is unreasonable to act as if market conditions will remain static over a period of 30 years. History shows that significant swings occur in risk and correlations between asset classes and in the risk of the market as a whole.

Target Date Folios are reviewed annually. We examine the underlying analysis behind the glide paths, and compare the forward projection of risk and return with that of the original design. Our process for designing the Target Date Folios focuses on a targeted expected risk level at each age cohort rather than a specific asset allocation. The risk of a portfolio that is 60% allocated stocks and 40% allocated to bonds may change substantively over time, for example, and we believe that the risk is the crucial variable to manage.

On the basis of market variability in recent decades, we expected that the Folios' original asset allocations would remain relatively consistent over their initial years. However, our review in late 2009 demonstrated the value of the annual analysis. The two-year period ending in November 2009 proved to be more volatile than any period in recent market history. In addition, correlations between almost every asset class increased dramatically during that time. This prompted Folio Investing to adjust the Target Date Folios' asset components to make the portfolios more conservative than originally planned.

When we re-evaluated the Target Date Folios toward the end of 2010, three years after the initial design, the allocations changed to de-emphasize inflation-protected bonds (TIPS), while maintaining a high exposure to other asset classes that tend to provide inflation protection (such as commodities). This reduction in exposure to TIPS was driven almost entirely by a substantial decrease in diversification benefits conferred by TIPS as compared to other asset classes due to a substantial increase in the correlation of TIPS returns with equity asset classes.

Our research suggests that investors are better served by an approach that has the flexibility to respond to historically significant variations in market conditions. A body of research, in addition to our own, supports the idea that a static approach to calculations of appropriate risk and diversification does not provide the best solution for investors[5].

Target Date Folios are Transparent

Because the specific holdings in these Folios are purchased by investors, every investor can always see exactly what is in their portfolio, and understand the associated fees. The downside of not knowing enough about what your fund holds became clear when one 2010 Target Date fund lost 41% of its value in 2008 -- more than the Standard & Poor's 500-stock index's 37% fall. The reason: a sizeable allocation to mortgage-backed securities in its bond fund and a 70% allocation of assets to stocks. [iii] Simply knowing the percentage of this fund in bonds was not enough to make an informed decision. The SEC has taken a step in its new proposed rules by calling for clearer marketing materials that would include the asset allocation in the name of the fund, and also feature a chart or graph that "clearly depicts the asset allocations among types of investments over the entire life of the fund." We think it's important, however, to show the full complement of investments at a level sufficient to provide real information, and also to address the risk in the portfolio.

Target Date Folios are designed to match an investor's Risk Tolerance

A common criticism of Target Date Funds is their one-size-fits-all approach to risk. Typically Target Date Funds assume the same glide path works for everyone targeting a set date. (The term glide path refers to how quickly one of these funds grows conservative as its target date nears.) But clearly that's not true. Someone 50 years old with $1 million in savings likely has a very different approach to risk than someone the same age with $50,000 saved. To address that, Target Date Folios were created in three risk profiles for every end date: **conservative, moderate** and **aggressive.** Glide paths for the three levels are depicted in Appendix C.

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[5] http://www.ft.com/cms/s/0/43be59a0-add5-11de-87e7-00144feabdc0.html#axzz1B1zTifUx

Conclusions: The Case for Target Date Investing

The overall concept of Target Date investing – through Funds or Folios – has proven itself in recent years. Many people need help building diversified portfolios that are appropriate for their age and situation. And research has confirmed that investors in retirement plans using Target Date Funds have tended to out-perform their counterparts who do not[iv].

Nevertheless, we believe that Target Date Folios offer significant important improvements over the traditional Target Date Fund. The performance of Target Date Folios shows that investors, plan sponsors and regulators should focus on four key attributes: Cost, Diversification, Risk, and Transparency. The Target Date Folios, specifically designed with these factors in mind, provide an alternative to traditional funds.

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[i] http://online.wsj.com/article/SB10001424052748703460404575244682419158898.html

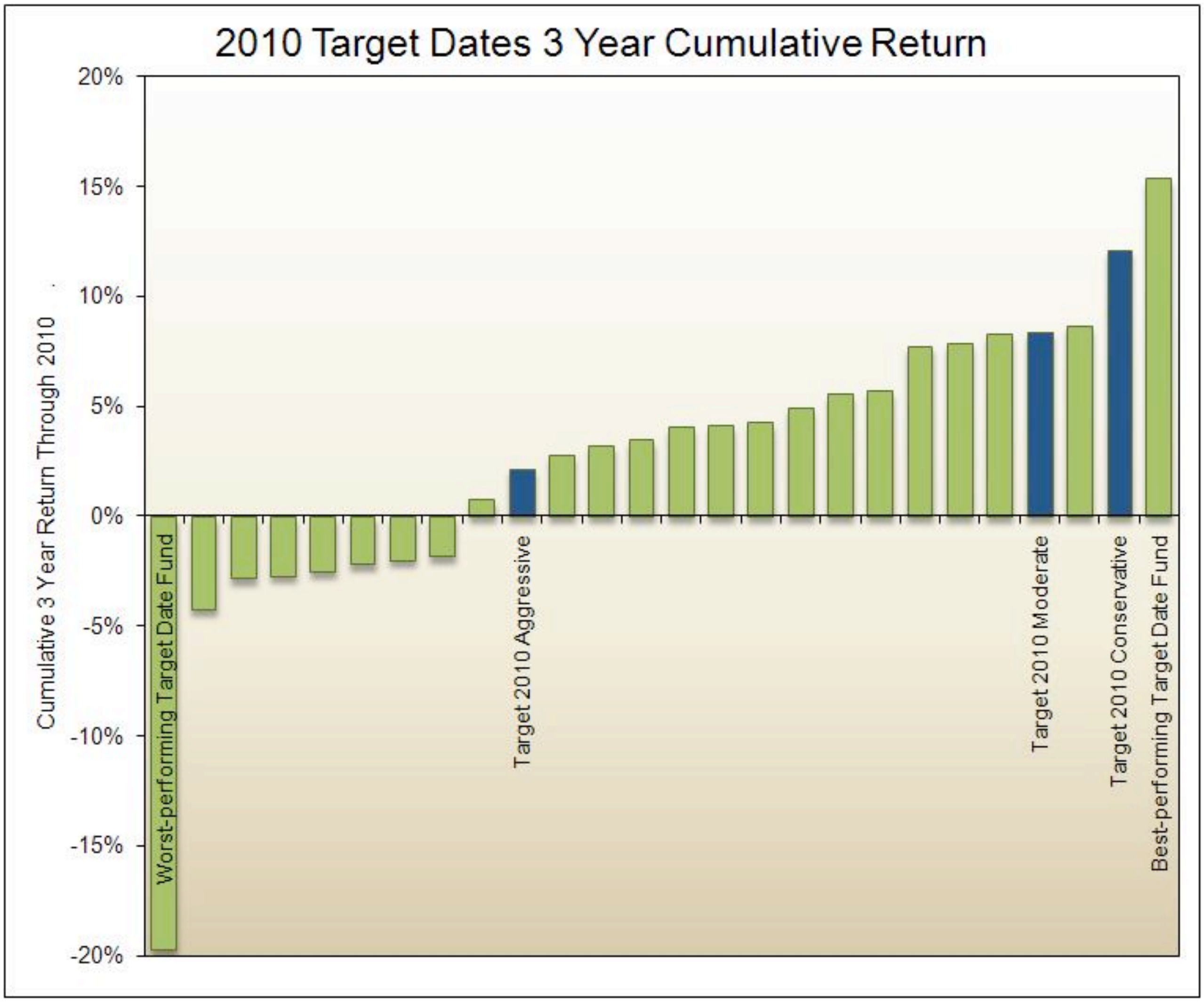
[ii] http://www.dol.gov/ebsa/publications/401k_employee.html

[iii] http://www.nytimes.com/2009/06/29/your-money/mutual-funds-and-etfs/29target.html?_r=2&scp=48&sq=Tara%20Siegel%20Bernard&st=Search

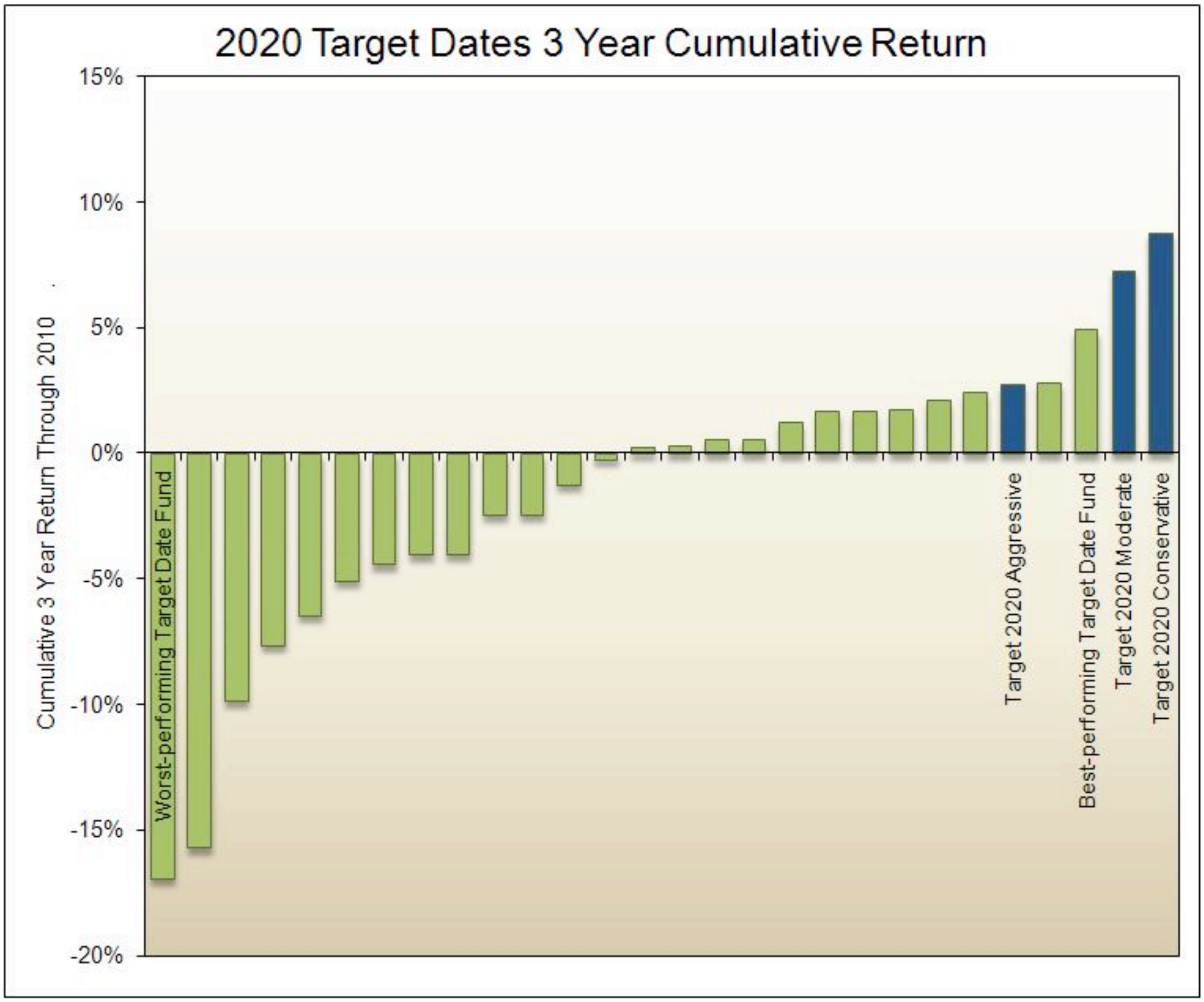
[iviv] See, e,g, http://corporate.morningstar.com/US/documents/MethodologyDocuments/MethodologyPapers/TargetDateFundSurvey_2010.pdf and https://corp.financialengines.com/press_room/press_releases/2010/20100125.html

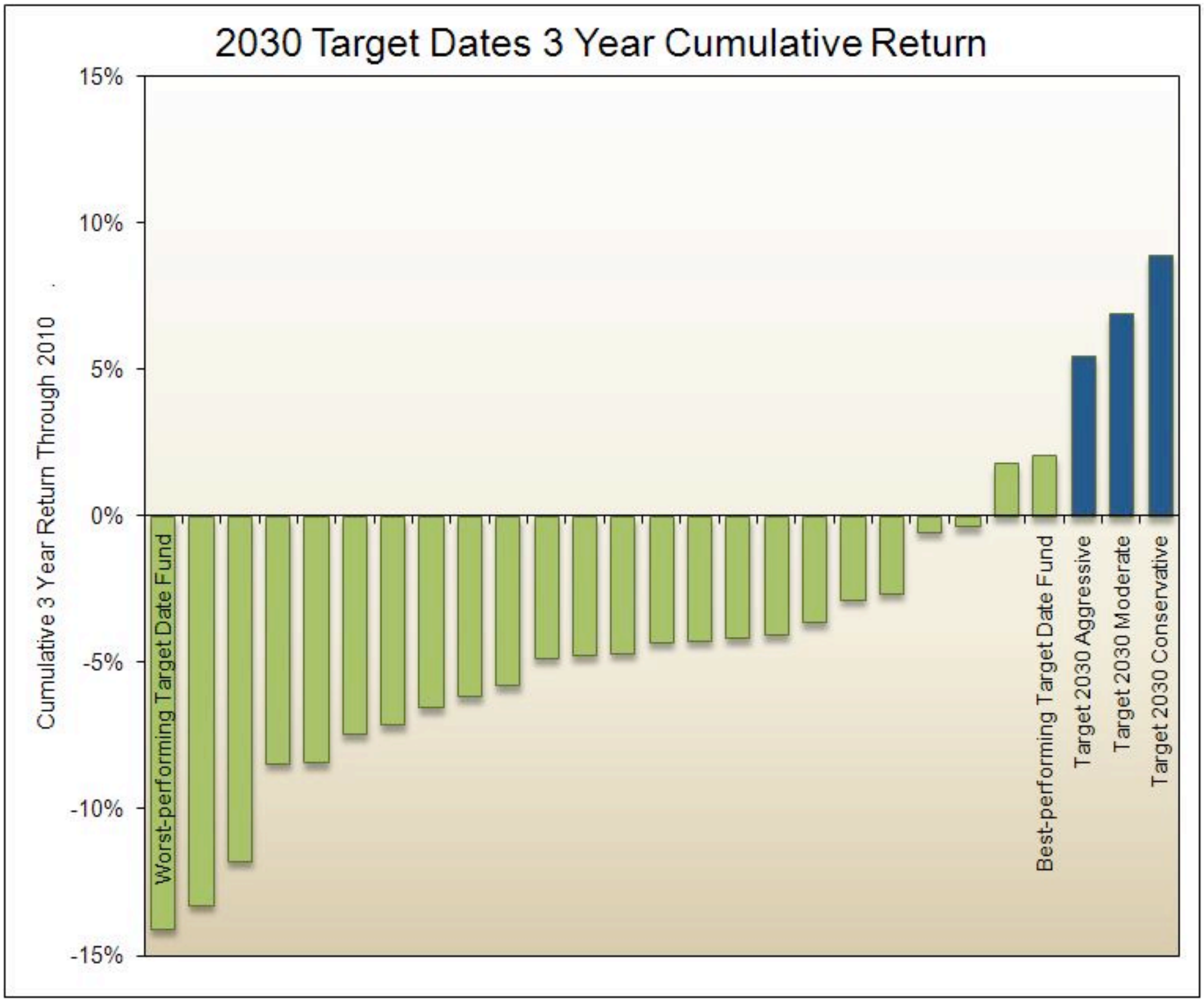
APPENDIX A: PERFORMANCE COMPARISON[1]

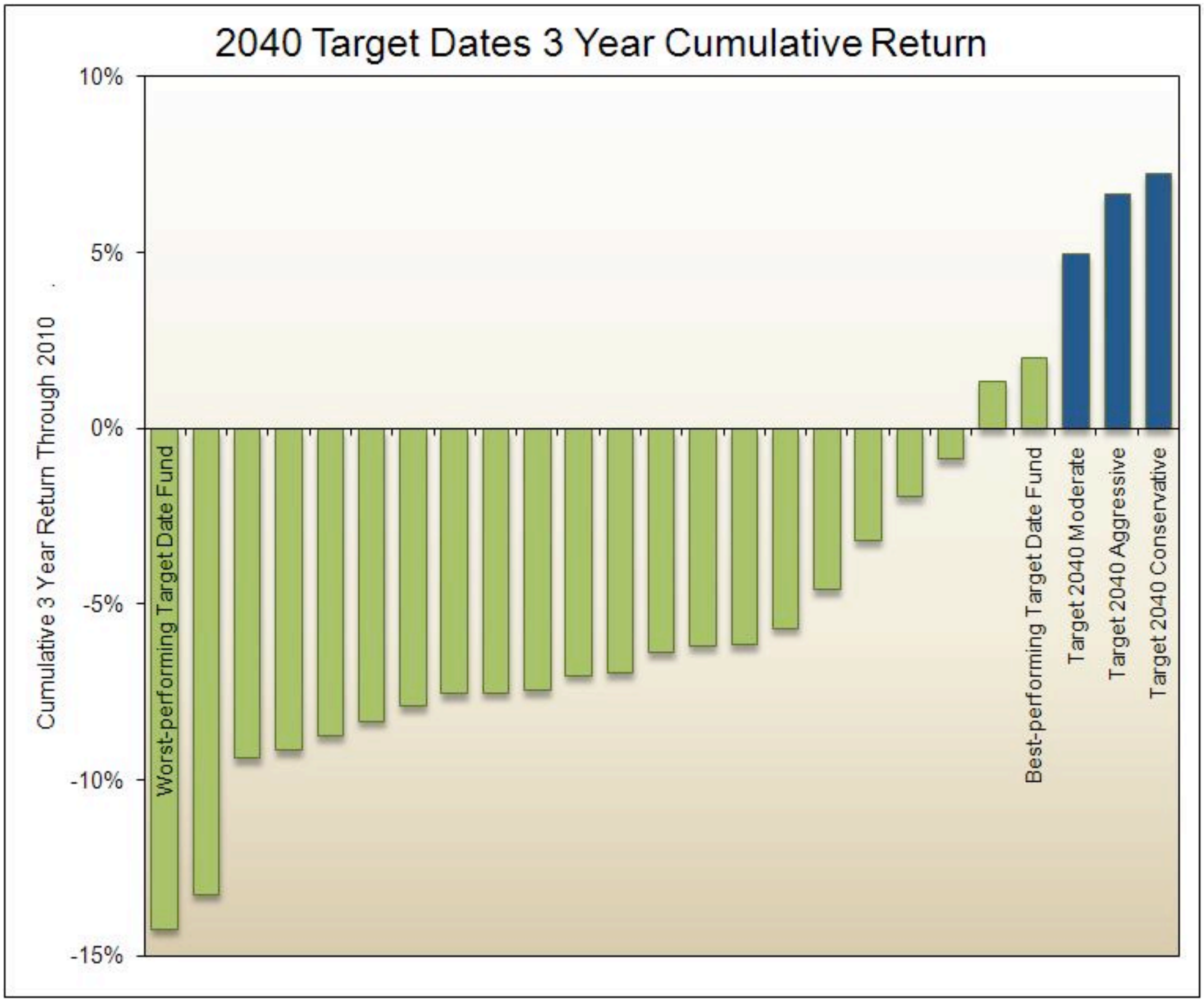
- Blue bars represent Target Date Folios.
- Green bars represent Target Date mutual funds. Consistent with our marketing arrangements with various fund companies, we have not included the names of specific mutual funds.



[1] As with any investment, investments in Target Date Folios are subject to investment risk including the loss of the principal amount invested. Investors should consider the investment objectives and risks of the Target Date Folios before investing. For more information regarding the Target Date Folios, please visit our website at www.FolioInstitutional.com.


2020 Target Dates 3 Year Cumulative Return
Cumulative 3 Year Return Through 2010
15%
10%
5%
0%
-5%
-10%
-15%
-20%
Worst-performing Target Date Fund
Target 2020 Aggressive
Best-performing Target Date Fund
Target 2020 Moderate
Target 2020 Conservative


2030 Target Dates 3 Year Cumulative Return
Cumulative 3 Year Return Through 2010
15%
10%
5%
0%
-5%
-10%
-15%
Worst-performing Target Date Fund
Best-performing Target Date Fund
Target 2030 Aggressive
Target 2030 Moderate
Target 2030 Conservative


2040 Target Dates 3 Year Cumulative Return
Cumulative 3 Year Return Through 2010
10%
5%
0%
-5%
-10%
-15%
Worst-performing Target Date Fund
Best-performing Target Date Fund
Target 2040 Moderate
Target 2040 Aggressive
Target 2040 Conservative

APPENDIX B

Impacts of Brokerage and Bid-Ask Spread

For Folio Institutional clients, brokerage costs average about 0.25% per year.

At FOLIO*fn*, an unlimited brokerage plan for an individual investor costs $290 per year. For a $50,000 portfolio, this equates to 0.58% in brokerage expense each year. For a $100,000 portfolio, this equates to 0.29% in brokerage expense each year. Some of this cost would need to be deducted from the potential benefits of investing in the Target Date Folios. Since the single flat fee also covers unlimited investing in an unlimited number of accounts – including non-retirement accounts – it is difficult to determine how much should actually be allocated to a Target Date Folio. Obviously, then, this source of expense scales directly with account size and with other investing accounts covered under the same fee.

When the Target Date Folios were first launched, we tracked model returns rather than funded returns. Starting in September 2009, we created funded portfolios to allow us to include the impacts of the bid-ask spread. From September 2009 through December 2010, we found that the funded portfolios had an average 0.1% annual drag vs. the model portfolios, and we attribute this drag to bid-ask spread. This is consistent with our internal research on the expected execution costs, based on turnover and the bid-ask spreads of the underlying ETFs.

The impacts of the bid-ask spread on the three-year performance results are partly reflected in the quoted results because we have calculated performance using the funded Folio returns since September 2009.

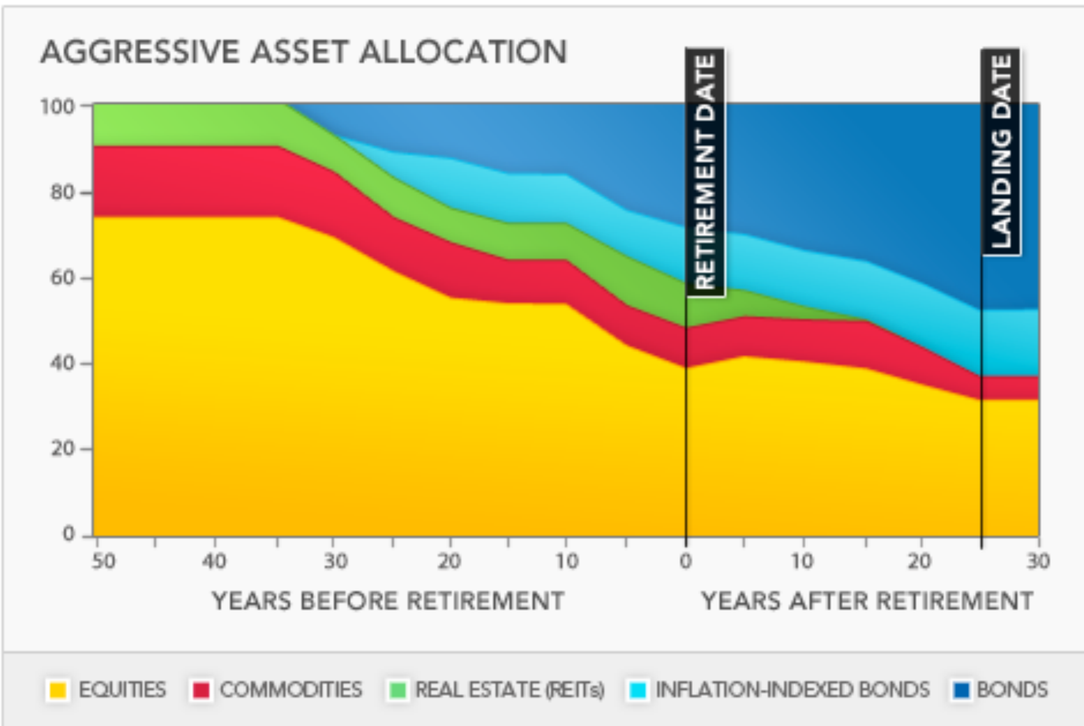
A reasonable estimate for the total impacts of brokerage and bid-ask spread for retail investors implementing these Folios would be 0.68% per year for a $50,000 portfolio and 0.39% for a $100,000 portfolio. For Folio Institutional clients, the implementation costs of these Folios would be about 0.35% per year.

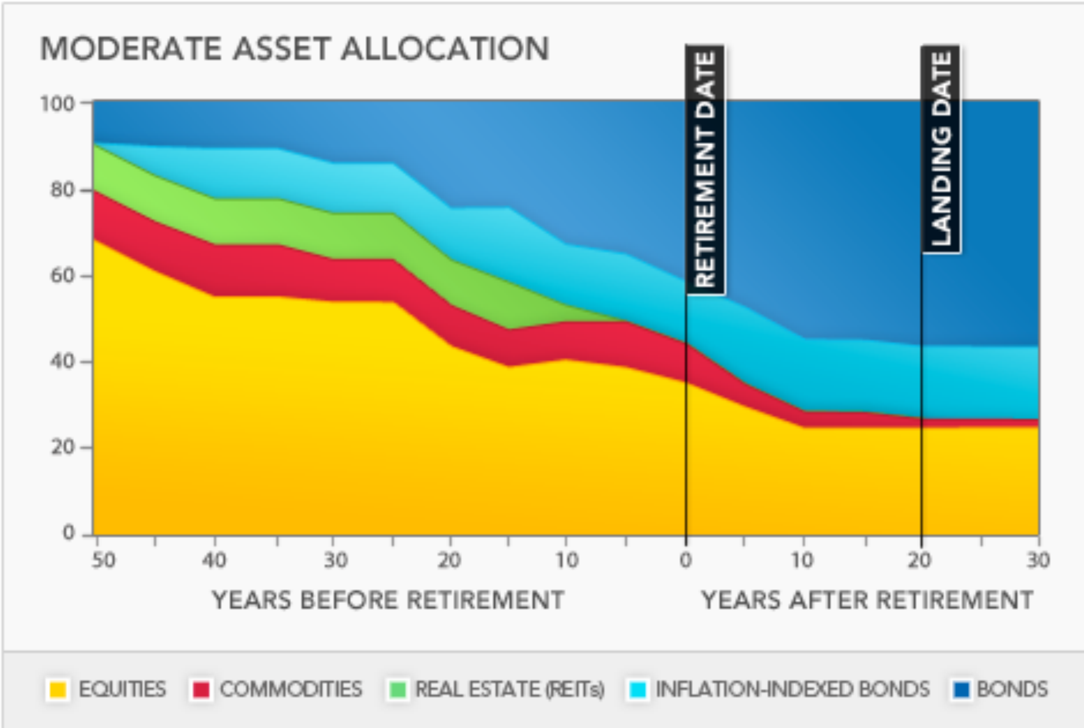
[1] http://www.businessweek.com/magazine/content/07_42/b4054402.htm

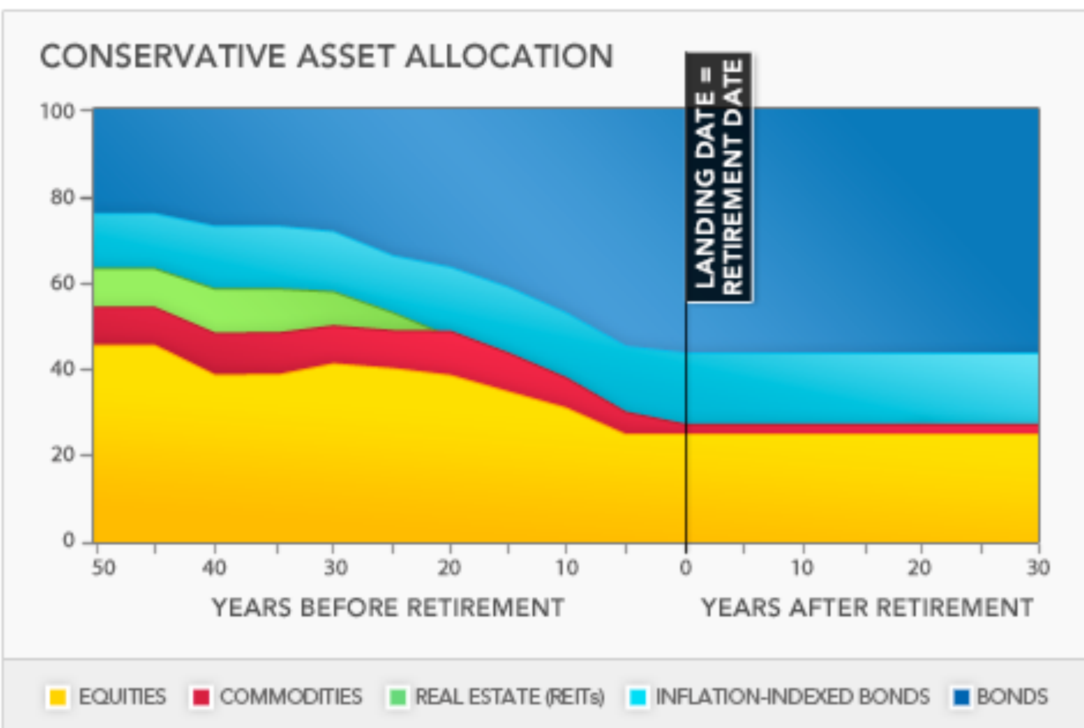
[2] https://advisors.vanguard.com/VGApp/iip/site/advisor/investments/bidaskspread

APPENDIX C: Target Date Glide Paths

Note: Glide path charts represent long-term baselines, but allocations may differ year-to-year due to changes in market risk and correlations between asset classes.




MODERATE ASSET ALLOCATION
RETIREMENT DATE
LANDING DATE
100
80
60
40
20
0
50
40
30
20
10
0
10
20
30
YEARS BEFORE RETIREMENT
YEARS AFTER RETIREMENT
EQUITIES
COMMODITIES
REAL ESTATE (REITs)
INFLATION-INDEXED BONDS
BONDS


CONSERVATIVE ASSET ALLOCATION
LANDING DATE = RETIREMENT DATE
100
80
60
40
20
0
50
40
30
20
10
0
10
20
30
YEARS BEFORE RETIREMENT
YEARS AFTER RETIREMENT
EQUITIES
COMMODITIES
REAL ESTATE (REITs)
INFLATION-INDEXED BONDS
BONDS