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September 2015

Capitalizing on a Clear and Present Opportunity in Target-Date Funds

Macro Diversification

In his foreword to the 2007 Research Foundation of the CFA Institute publication *The Future of Life-Cycle Saving and Investment*, Laurence Siegel outlines the dual role of a comprehensive life-cycle solution for individuals, suggesting that it should focus on both 1) design features that acknowledge fundamental questions around how much to save and how to draw down savings and 2) where to invest. He correctly points out that much of the investment and retirement industries' attention has focused on the question of "in what to invest?" while the other design features have, until more recently, been largely neglected.

While we would agree with his assessment and are encouraged by the developing body of academic and practical work around saving and spending strategies and behaviors, as an investment manager we seek to broaden the debate regarding investment content or the question of "in what to invest?" We suggest, however, that our perspective on investment content has implications for a more optimal broad retirement plan design.

Since Siegel's publication, the retirement industry has seen a steady emergence and broad adoption of target-date funds (TDFs) as the primary qualified default investment alternative (QDIA) for defined contribution (DC) plan participants. Encouraged by the Pension Protection Act of 2006 and reinforced through observations of participant behaviors, the implementation and use of TDFs has been a key step toward further embedding investment content that serves to address the fundamental life-cycle questions faced by specific participant cohorts. For example, a purposeful allocation to U.S. Treasury Inflation Protected Securities (TIPS) may be of interest to some investors, but within a TDF design framework, particularly for those nearing the end of their working career and their need for real income in retirement, most practitioners would agree that TIPS should be included in some manner in TDF design for that age cohort. Similarly, we propose that an allocation to Macro Diversification approaches should be of interest and holistically advantageous to many investors. More specifically, for those participant cohorts approaching and in retirement, from a design perspective, Macro Diversification has the potential to be an effective allocation for managing the risks faced by those participants. Macro Diversification, in our opinion, remains underutilized in today's TDFs.

Macro Diversification, by our definition, is a fundamentally based, top-down investment approach that is designed to expose appropriate amounts of risk capital to various global markets and currencies using a series of disciplines inclusive of macroeconomic analysis, geopolitical analysis, and an appropriate assessment of the market's conventional wisdom. Having historically emphasized strategic asset allocations, and in some cases a focus on security selection or a very broad active asset allocation, TDFs have typically not included the type of Macro Diversification that applies an active, top-down investment process across a more comprehensive breadth of markets and currencies. This has been true despite a widely held view and a robust underpinning of empirical research and real-world experience that prices of financial assets and securities revert to fundamental value over time. A top-down investment focus is, by definition, keenly focused on the intersection of geopolitical and macro themes that simultaneously cut across many markets and currencies.

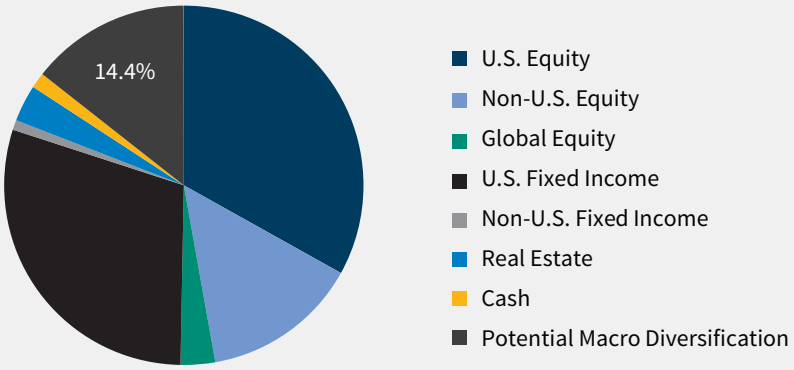
Furthermore, it also naturally embeds a dynamic risk approach that calibrates risk commensurate with opportunity and focuses on the need to better balance upside opportunities with higher-moment downside risks.

In our view, Macro Diversification would fit within the broad investment category of alternative, or nontraditional, investment strategies. When we consider the record of the use of alternatives in asset allocation programs, they have generally delivered positive contributions to absolute levels of return and, correspondingly, improved the risk-adjusted return profile through their lower correlation to traditional equity and fixed income strategies.[1]

The Current State of TDFs in Defined Contribution

A current appraisal of defined benefit (DB) plan sponsor allocations shows an aggregate exposure to strategies that generally include some proclivity for Macro Diversification at more than 14%.[2] Yet, within DC plans such exposure is virtually non-existent today.

DB Fund Sponsor Average Asset Allocation: Q4 2014



Source: William Blair, Callan Investment Institute Market Pulse

Across the landscape of TDFs, the vast majority of providers continue to use, and correspondingly the largest pools of assets are invested in, traditional long-only (TLO) asset classes. This is true of both the largest families of proprietary TDFs offered by Fidelity, T. Rowe Price, and Vanguard and the open-architecture structures that allow greater flexibility of investment content. In either case, the current allocation within TDFs to explicit (or potential) sources of Macro Diversification is notably lacking. This can be inferred by a breakdown of the current content. Unlike the average allocation of the DB plans, most TDFs lack a portion of their allocation designed to exploit opportunities across markets and currencies on an active, top-down basis. Instead, allocations are largely to either single asset classes on a passive basis or single asset classes on an active basis, where that active basis is bottom-up, rather than top-down, oriented. In the rare instance where a top-down-oriented approach is incorporated across these typical single-asset-class allocations, it is almost always relegated to a very narrow subset of the Macro Diversification opportunity afforded among a few broad asset classes rather than the across the breadth of 75 individual markets and virtually never equipped to separate the currency risk allocation decision across 32 currencies.

Much of the construction bias to TLO asset classes in DC plans has arisen from an attempt to satisfy a dual goal of minimizing the cost structure of QDIAs while maintaining a high degree of liquidity. The current asset class allocation frameworks within TDFs allow for daily liquidity with relatively low transaction costs in order to meet the variable cash flow trends of investors in DC plans; we know that higher fees, in aggregate, negatively affect accumulated wealth levels for participants, all else held equal. While we acknowledge that

"Most TDFs fail to include a strategy that can exploit opportunities across markets and currencies on an active, top-down basis."

[1] "The Case for Liquid Alternatives in Defined-Contribution Plans," Exhibit 3, *The Journal of Alternative Investments*

[2] *Callan Investment Institute Market Pulse*, Fourth Quarter 2014, Potential Macro Diversification includes "U.S. Balanced, Global Balanced, Hedge Funds and Other Alternatives"

there is a meaningful importance to having appropriate levels of liquidity throughout the investment exposures in TDFs, we suggest that financial markets' depth, technology, record-keeping, and custodial capabilities have today advanced to a stage that allows for additional investment categories with slightly less favorable liquidity profiles to be incorporated into the overarching design of TDFs. Furthermore, while we believe that the level of fees represents an important consideration for fiduciaries in the design and implementation of all options within a DC plan, not simply the QDIA, we encourage plan sponsors to consider an optimal fee structure rather than simply seeking the lowest-cost (or close to the lowest-cost) investment options.

We advocate for an appropriate allocation both to liquid and illiquid alternatives such that an investor can improve the overall Sharpe Ratio.[3] Within the construct of a multi-asset allocation composed of both highly liquid and less liquid exposures, we believe that investors, particularly those in DC plans who typically have long investment horizons, can benefit from higher risk-adjusted returns without forsaking broader portfolio liquidity. Much of this is accomplished by the pooling nature of investors in the TDF. One would be hard-pressed to demonstrate a scenario where all investors in the QDIA chose to liquidate their position in the QDIA in the very short time frame of a few days. The anecdotal experience of the global financial crisis proved that while some investors chose to reduce or eliminate their exposures to the financial markets during that period, the vast majority of participants remained committed to a savings program, including continuing to make regular payroll-deducted purchases of the QDIA. Thus, redemptions were manageable and met without delay, thereby demonstrating the ability for some proportion of the total asset allocation to be allocated to less liquid exposures. Even in a more extreme scenario, we believe liquidity buffers could be wrapped around relatively less liquid exposures to appropriately facilitate redemptions.

Characteristics of liquidity often parallel costs for investments. That is, highly liquid asset classes including U.S. Treasury securities and large-capitalization U.S. equities often have very narrow bid-ask spreads and minimal price effect when being bought or sold (acknowledging that there have been occasional events demonstrating otherwise). The preference by DC plan sponsors for "low" cost investments has often led them to design a plan incorporating low-cost, passive TDFs and many core investment options composed of passively implemented mutual funds or collective investment trusts (CITs). The motivation for seeking low-cost investment options is understandable and largely appropriate given that, all else held equal, higher fees reduce total portfolio returns and, thus, reduce ending accumulated wealth for an investor. In our view, however, the drive to solely seek low-cost investments invites new risks for an investor that can be largely avoided. We suggest that there exist "optimal" cost structures, particularly in the design of multi-asset class solutions such as TDFs, that allow for better risk-adjusted returns throughout the life cycle and, importantly, can mitigate key risks such as market risk at vital points of the life cycle such as are found in those years nearing (and early into) retirement. Furthermore, our experience has indicated that at moments of significant market stress (e.g., the global financial crisis), many TLO asset classes realize a high correlation with one another, thereby reducing, if not eliminating, the key reason for seeking diversification in portfolio construction. Hence, we suggest that incorporating nontraditional asset classes (and investment strategies that may have less liquidity in the short run) along with active management by strategies that embrace a Macro Diversification philosophy that demonstrate relatively high alpha,[4] reasonable risk profiles, attractive Sharpe Ratios, and low correlations to TLO investments should be part of a TDF solution even if doing so means a slightly higher overall cost structure.

Having acknowledged the place for a thoughtful allocation to alternatives across the liquidity spectrum, we suggest that an important first step to introducing Macro Diversification actually need not require content that is illiquid, nontransparent, and/

[3] Average return minus the risk free rate diveded by the standard deviation of return

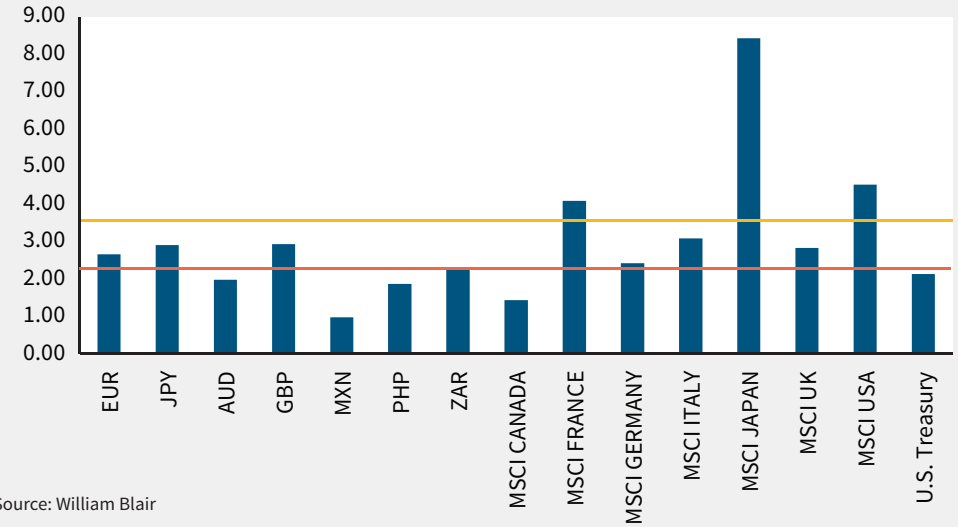
[4] The difference between a fund's actual returns and its expected returns based on its beta

or of the high-fee variety, but rather an allocation that can provide breadth, skill, and very feasible implementation and execution with liquidity, transparency, and fees appropriate for the opportunity. Very few TDF strategies in the market today utilize Macro Diversification, and we know that many strategic, traditional asset-allocation approaches can be suboptimal from a risk/return perspective at various points in the market cycle due to valuation or risk factors not being compensated. We therefore believe that there is value for investors in a life-cycle savings program to employ certain Macro Diversification strategies to focus more holistically on the near- and intermediate-term risk challenges inherent to any asset-allocation program and particularly for those nearing retirement.

Case for Macro Diversification in an Asset-Allocation Framework

Acknowledging that the current TDF landscape is one that is predominantly focused on strategic asset allocation possibly combined with some individual security selection yet possessing very little top-down Macro Diversification characteristics, we must consider the impact of adding such an approach in a complementary role within a TDF. First, we suggest that the success of Macro Diversification resides in a global fundamental investment approach that relies on the strong empirical underpinning that prices revert to fundamental value for markets and currencies over time. This investment approach is one that many well-regarded academicians have sufficiently articulated, including Robert Shiller[5] and John Cochrane.[6] Similar to these established empirical observations for markets, we find that currencies also revert to their fundamental values over defined periods. In fact, the empirical grounds show that the reversion is even stronger (or the average reversion time is shorter) for currencies.[7] A fundamentally focused investment approach is naturally oriented with the major tides of valuation and the gravitational-like pull of price toward value over time, and it is aware of the often circuitous path of price toward value. Hence, any approach to Macro Diversification must be disciplined and de-prioritize an all-too-often overabundant focus on the sensational but fleeting ripples of the daily headlines. Instead, it must reorient toward the most notable and intense macroeconomic themes and geopolitical negotiations that represent the waves and will ultimately exert a powerful and often lasting influence on price, cutting across markets and currencies. This elevation of the focus on the tides and waves at the expense of ripples improves the risk-adjusted performance of a Macro Diversification approach when viewed in isolation. At the same time, this content delivers improved diversification and lower correlation when combined with other TLO investment allocations, especially those focused on strategic asset allocation and/or security selection.

Average Half Life of Currency and Asset Reversion of Price to Value (Years)



Source: William Blair

"The success of Macro Diversification depends on a global, fundamental investment approach that relies on the empirical underpinning that price inevitably reverts to fundamental value in markets on and currencies over time."

[5] "Market Volatility," Robert Schiller, MIT Press

[6] "What do we know about the stock market," John Cochrane, University of Chicago Booth School of Business

[7] "Currency Management: The Case for Value Investing," Dynamic Allocation Strategies Team, 2014

This efficiency improvement can be observed through a higher Sharpe Ratio, and such an improvement is fungible as it may occur through either a similar return expectation at lower risk levels or higher return expectations at similar risk levels. As we focus on the age cohorts leading up to retirement, we find that adding a 10% allocation to a Macro Diversification approach[8] funded on a pro rata basis across a typical strategic asset-allocation glide path raises the ex-ante Sharpe Ratio from 0.15 to 0.17—a 13.3% improvement. While this may not appear significant at first glance, one could liken it to the difference between a 40-yard dash time of 4.4 seconds versus 5.0 seconds. That is the same degree of improvement as found in our example of the ex-ante Sharpe Ratio from the addition of Macro Diversification—to the players on the football field, it is strikingly different and significant. Similarly, this type of improvement in Sharpe Ratio as it relates to the accumulation of savings is equally significant for those investors approaching retirement. In an environment where every basis point counts, this type of improvement is desirable and should be pursued. For example, at a risk level of 12% (typical average for the 20 years leading up to and into retirement), raising the Sharpe Ratio by the magnitude outlined above leads to a 9% increase in total wealth into retirement assuming a normal interest rate environment, and a 17% increase in total wealth given a low interest rate

WB Dynamic Allocation Strategies Equilibrium Covariance Matrix

	U.S. Large Cap	U.S. SMID Core	International Equity	U.S. Aggregate Fixed Income	Long-Term Govt. Bonds	Short-Term Govt. Bonds	U.S. High Yield	U.S. TIPS	Intermediate-Term U.S. TIPS	U.S. REITS	Commodities	Diversified Alternatives	Macro Diversification
U.S. Large Cap	1.0	0.9	0.9	0.3	0.3	0.1	0.5	0.3	0.3	0.5	0.0	0.9	0.6
U.S. SMID Core	0.9	1.0	0.8	0.3	0.3	0.1	0.5	0.2	0.2	0.5	0.0	0.8	0.5
International Equity	0.9	0.8	1.0	0.3	0.3	0.1	0.5	0.2	0.2	0.5	0.0	0.8	0.6
U.S. Aggregate Fixed Income	0.3	0.3	0.3	1.0	1.0	0.2	0.7	0.8	0.8	0.1	0.0	0.3	0.4
Long-Term Govt. Bonds	0.3	0.3	0.3	1.0	1.0	0.2	0.8	0.8	0.8	0.1	0.0	0.3	0.4
Short-Term Govt. Bonds	0.1	0.1	0.1	0.2	0.2	1.0	0.2	0.2	0.2	0.0	0.0	0.1	0.2
U.S. High Yield	0.5	0.5	0.5	0.7	0.8	0.2	1.0	0.6	0.6	0.2	0.0	0.4	0.5
U.S Tips	0.3	0.2	0.2	0.8	0.8	0.2	0.6	1.0	1.0	0.1	0.0	0.2	0.3
Intermediate-Term U.S. TIPS	0.3	0.2	0.2	0.8	0.8	0.2	0.6	1.0	1.0	0.1	0.0	0.2	0.3
U.S. REITS	0.5	0.5	0.5	0.1	0.1	0.0	0.2	0.1	0.1	1.0	0.0	0.5	0.3
Commodities	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0
Diversified Alternatives	0.9	0.8	0.8	0.3	0.3	0.1	0.4	0.2	0.2	0.5	0.0	1.0	0.5
Macro Diversification	0.6	0.5	0.6	0.4	0.4	0.2	0.5	0.3	0.3	0.3	0.0	0.5	1.0

Source: William Blair

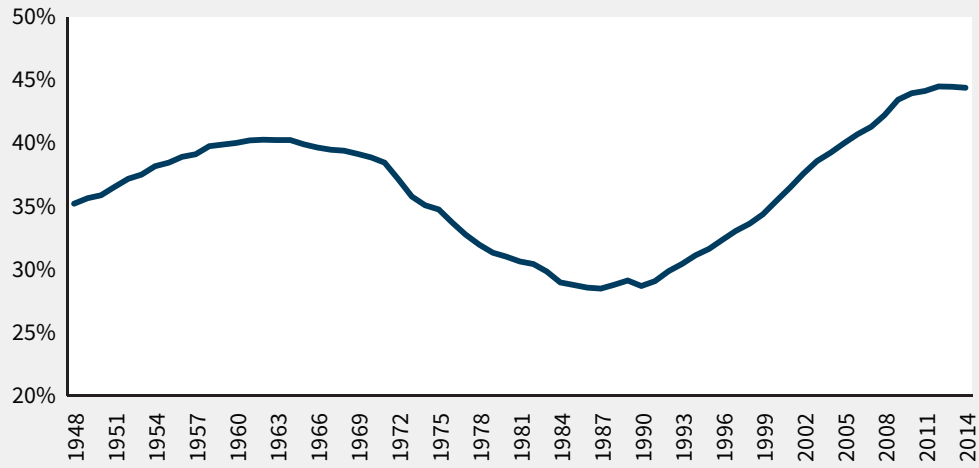
[8] Macro Diversification approach characteristics are represented by the proprietary ex-ante risk, return, and correlation assumptions of the William Blair Dynamic Allocation Strategies team. Typical strategic asset allocation glide path exposures are modeled as passive allocations. For more on the matrix modeling, please see "Multilayer Modeling of a Market Covariance Matrix," *The Journal of Portfolio Management*, Renato Staub

environment such as the current one in the United States and many of the developed markets. Because the typical strategic asset-allocation glide path becomes more fixed-income-oriented as retirement approaches, a greater use of Macro Diversification strategies provides enhanced overall diversification as those have a low to modest correlation with typical glide path asset classes, but especially with respect to fixed income.

As indicated, we believe that there is a strong investment case to be made for the addition of Macro Diversification. From a plan design perspective, it is the age cohort that is approaching retirement in particular that plays a unique role in short- and long-term workforce management. We have seen this particular cohort grow in size at many firms consistent with the broader underlying demographic trend driven by the baby boomers (born between 1946 and 1964—ages 51 to 69). The percentage of the employed who are age 45 or greater is as high as it has ever been since the recording of BLS data.[9] Many practitioners and employers would suggest that a homogenous workforce may lead to difficult workforce transitions in the long run as an outsized cohort seeks to retire. From that perspective, seeking more optimal outcomes for the cohorts approaching retirement can facilitate a more efficient managing of the age diversity and skills of a full workforce. As a recent and still relevant example, challenging investment performance for the employee cohort nearing retirement may lead workers in that cohort to delay their transition to retirement. In such a situation, that delay may crowd out the hiring of workers in other age cohorts, distorting the desired interaction, collaboration, and sharing of perspectives. Although a topic deserving of broader research and analysis in its own right, research using Danish-linked employer-employee data suggests that there may even be an empirical case to be made for lower productivity across the firm when the workforce is either very homogeneous or very heterogeneous with respect to age.[10] Hence, improvements in investment content may serve to help attract, retain, and, ultimately, transition employees to retirement, thereby providing enhanced workforce productivity, flexibility, and flow.

"Improvements in investment content may serve to help attract, retain, and, ultimately, transition employees to retirement."

% of U.S. Employed Ages 45 and Higher



Source: William Blair

[9] U.S. Bureau of Labor Statistics, 1948-2014

[10] "Age Structure of the Workforce and Firm Performance," Christian Grund and Niels Westergard-Nielsen

Incorporating Macro Diversification (or the Broader Use of Alternatives) into the QDIA

In recent years, plan sponsors and fiduciaries for DC plans have increasingly gravitated toward the use of low-cost, passively implemented TDFs in their plans. While actively managed TDF strategies still account for nearly two-thirds of industry assets, largely because of legacy factors and the firmly entrenched presence of leading TDF providers, passively managed strategies have consistently demonstrated a higher growth rate than actively managed strategies, including 16% organic growth in 2013 compared with approximately 8% for active TDFs.[11] We contend that neither fully passive nor fully active content represents an optimal design for TDFs. Rather, an optimally constructed TDF would incorporate the use of passive and active content based on the prevailing opportunity set within any respective asset class. Where breadth, skill, and the execution demonstrated by and/or conferred upon an investment manager can lead to higher Sharpe Ratios, active management should be employed. Conversely, in asset classes not demonstrating those characteristics, passive management may be the appropriate choice. The recognition that a more optimal design implies the use of a combination of passive and active strategies including traditional and nontraditional investment strategies has led to an increasing preference for and ultimate utilization of customized TDFs, particularly among large plan sponsors that often have the internal staff, resources, or investment consultants to perform functions such as manager selection and/or glide path design. We anticipate that the trend toward greater customization will continue and are encouraged by the following acknowledgement from McKinsey & Company: "Customized funds will also enable sponsors to increase the sophistication of the underlying funds, introducing strategies that would otherwise not be available as sole options in the line-up (such as more international and alternative asset classes) and thereby making the DC opportunity accessible to a broader set of asset managers that have not participated in DC to date."[12]

The overriding emphasis for the continued growth in customized solutions will be driven, in our view, by the following factors:

1) *Fiduciary liability* – offsetting some of the fiduciary responsibility to an investment manager as defined by ERISA will have an increasing appeal to plan sponsors.
2) *Greater precision* – recognizing that employers in different industries, with different workforce characteristics, and varying benefit structures do not all have the same risk-return profile, by definition.
3) *Investment design* – incorporating better investment techniques leads to more optimal outcomes for participants, including mitigating drawdown and preserving higher levels of wealth at key points in the life cycle.
4) *Control of product evolution* – enabling a plan sponsor to have discretion over facets of product design (including the overall cost and expense allocation) and to remove the constraint that design decisions are under the control of the off-the-shelf TDF manager.

We fully expect this trend toward customization will and should facilitate the incorporation of innovative investment strategies such as Macro Diversification into the investment design. Using Macro Diversification and other investment techniques that produce higher risk-adjusted returns over time with lower correlations to TLO strategies allows factors 2, 3, and 4 to be more easily satisfied for plan sponsors.

"Customized funds will also enable sponsors to increase the sophistication of the underlying funds, introducing strategies that would otherwise not be available as sole options in the line-up."

[11] "2014 Target-Date Research Paper," Morningstar
[12] "Capturing the Rapidly Growing DCIO Investment-Only Opportunity: The Time for Decisive Action is Now," McKinsey & Company, 2014

Conclusion

"More than 73 million American workers are covered by a DC plan today, a figure that has doubled over the past 20 years. And while 92 percent of private sector workers with access to a retirement plan have access to a DC option, only 30 percent still have access to a defined benefit plan (including just 8 percent who have access only to a DB plan)."[13] More specifically, within DC plans, the vast majority of new investment cash flows are directed to TDFs. For example, an estimated 82% of total net flows in DC plans were directed to TDFs last year.[14] This steady shift of employee savings to DC plans (and the TDFs within those plans) shows little sign of abatement.

This implies a great responsibility to plan participants from plan sponsors and retirement services providers, and in our view, this should lead to opportunities for continued improvement in TDF investment design and content. The incorporation of Macro Diversification is one such clear and present opportunity. While it has become more prevalent in DB plans, it is virtually nonexistent in DC plans today. Although there are good reasons to pursue allocations to alternatives with various degrees of illiquidity, Macro Diversification is a relatively liquid and natural first move into the alternatives space and can be paired constructively with other alternatives strategies. Macro Diversification has a well-documented basis of research showing the compensation for fundamental, top-down content and a complementary role with low to modest correlations with the content in typical strategic asset allocation glide paths. From an investment design perspective, compensated risk with low correlation to traditional asset classes provides a benefit to all investors. However, it is particularly advantageous for those employee age cohorts approaching and entering retirement as the correlation benefit becomes even more compelling given the greater emphasis on fixed income and as employers consider the importance of ensuring a dynamic workforce. The opportunity for Macro Diversification is available to both off-the-shelf TDFs and customized TDF solutions, with the latter currently poised to drive the way forward for the factors noted above.

"Macro Diversified strategies are a relatively liquid and natural first move into the alternatives space and can be paired constructively with other alternatives strategies."

[13] Ibid

[14] *DC Observer,* Fourth Quarter 2014, Callan Investment Institute

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