NORTHERN TRUST

# HOW INVESTORS BEHAVE

## The success of Defined Contribution (DC) plans relies to a great extent on individual actions. How do they behave when faced with investment decisions?

We present empirical evidence of how plan participants reacted to market fluctuations and discuss how DC plan investment offerings may impact investor actions and ultimately their ability to reach their retirement goals.

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RETIREMENT DISCOVERIES

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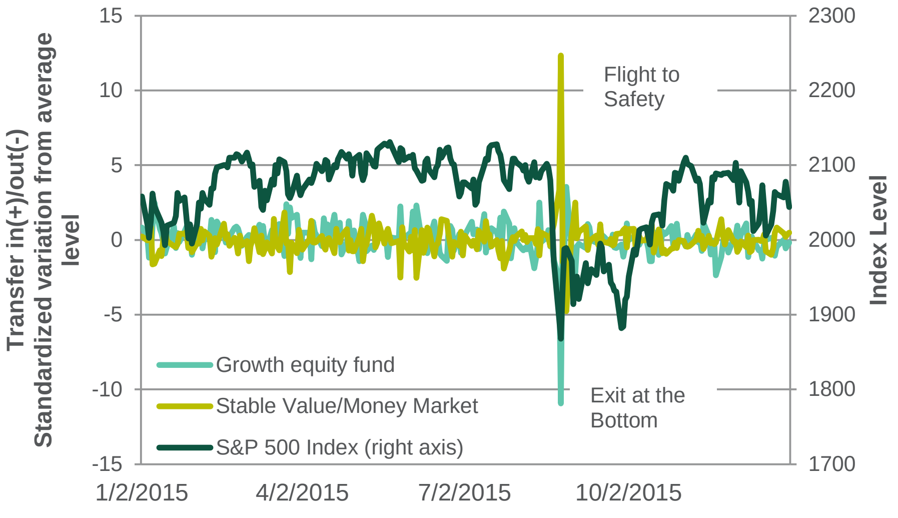
### FLIGHT TO SAFETY DURING DOWNTURNS

Specifically, let's look at participants' inter-portfolio transfers in(+)/out(-) of funds during volatile markets. The metric is relative to their average transaction levels, to make large/small funds comparable.[1]

When the stock market plummeted on 8/25/2015 (S&P500 index, Figure 1), participants in a large DC plan cashed out from its growth-oriented equity fund at a magnitude of about 11 times larger than on a regular day. Many of them flocked to a stable value fund at a similar magnitude, 12 times larger than the average transaction level. These moves indicated a flight to safety, but the timing of the exit at the bottom of the market was bad (and panicky).

**Figure 1 Panic at Bottom, Flight to Safety**




Source: DC Tracker Data, Bloomberg.

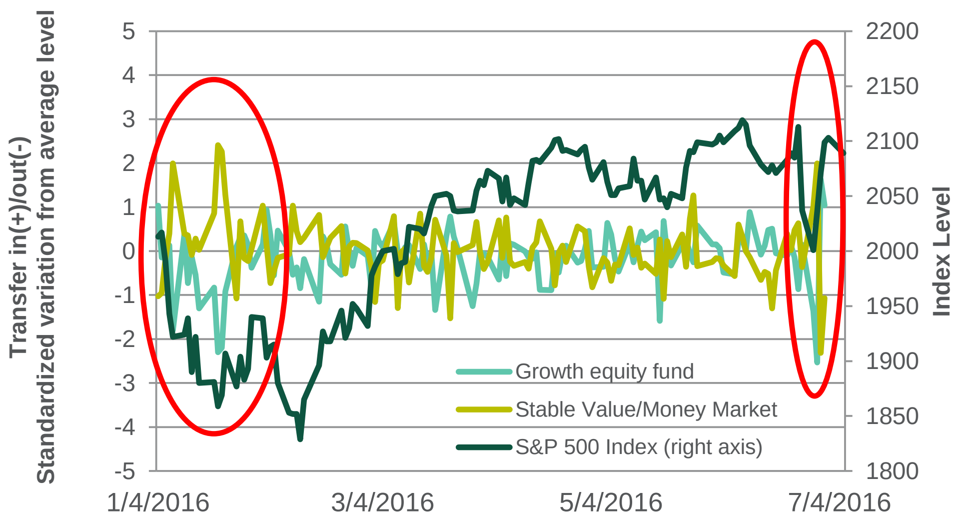
Fear can rise in volatile markets and investors may be prompted to derisk their portfolios, as was exhibited during the selloff at the beginning of 2016 (Figure 2). Unfortunately, the moves in the growth equity fund were *de facto* a “sell low and buy high” pattern, a.k.a., return-chasing.

Many investors are prone to making hasty moves upon surprise. For instance, the morning after Britain's vote to leave the European Union (“Brexit”), some of the largest DC record keepers saw volumes to their call centers increase 20-50% over regular levels.[2] Outflows from the growth equity fund were 250% larger than usual on June 28, 2016 (Figure 2).

**250%**

**LARGER THAN USUAL OUTFLOWS FROM THE GROWTH EQUITY FUND IN A LARGE PLAN FOLLOWING JUNE BREXIT OUTCOME**

**Figure 2 Investor moves during two recent volatile markets**




Source: DC Tracker Data, Bloomberg.

## DIFFERING INVESTOR SENSITIVITIES

In addition to the close-up examination of salient periods, we ran statistical tests on investor behavior in five DC plans in representative funds with different risk-return objectives, specifically, in stable value / money market funds (SV/MM), small/mid-cap growth-oriented funds, large-cap value/blend funds, and target date funds (TDFs).

Pro-cyclical return-chasing behavior is observed in plan P1 across the funds, as the transfers were positively, significantly correlated with the stock market (Figure 3). Plan P2, in contrast, was a group of largely calm investors, because none of the correlations were statistically significant.

Plans P3 and P4 participants showed counter-cyclical actions (buy low and sell high) in some of the equity holdings. Plan P5’s participant behavior was similar to plan P1’s, except that investors in TDFs were now statistically insensitive to market volatilities.

TDF investors also swung with the market (positive coefficient in most cases) but were more muted statistically (insignificant in most cases) than those in stand-alone equity funds.

**FIGURE 3: CORRELATIONS BETWEEN DAILY PORTFOLIO TRANSFERS AND MARKET FLUCTUATIONS (S&P500)**

| Investment Options | SV/MM | Small/Mid Growth | Large, Value/Blend | 2030 TDF | 2050 TDF |
|---|---|---|---|---|---|
| Plan 1 | -0.33* | 0.29* | 0.12* | 0.12* | 0.13* |
| Plan 2 | -0.06 | 0.03 | -0.01 | 0.04 | 0.00 |
| Plan 3 | -0.14* | -0.19* | -0.09* | 0.00 | 0.00 |
| Plan 4 | 0.06 | -0.30* | -0.07 | -0.12 | 0.24 |
| Plan 5 | -0.22* | 0.25* | 0.11* | 0.03 | 0.03 |

Notes: Statistically significant at 10% level; others insignificant. Red indicates pro-cyclical actions and green countercyclical.
Source: DC Tracker Data. Based on Jan. 2015 – Jun. 2016 data. Actual plans chosen at random.

## PREVALENCE OF RETURN-CHASING BEHAVIOR

We expanded the analysis to as many plans as the number of observations allowed for a meaningful statistic test.

Investors tended to move money out of SV/MM when the equity market was on a rise (negative, significant correlation for 44% of plans, Figure 4), and correspondingly into equity funds.

**Investors in small/mid-cap growth-oriented funds were more sensitive to market volatility than those in large-cap value/blend funds.**

Investors in the small/mid-cap growth-oriented funds were more sensitive to market volatility (positive, significant correlation for 35% of plans) than those in large-cap value/blend funds (13%). Investors appeared to seek higher returns from the small/mid-cap growth funds but, upon market turbulence, were unable to stomach the risk. Conversely, they seemed to hold greater confidence and patience in large-cap funds. Note, a few plans witnessed more money into the large-cap funds when the market declined, taking advantage of the lower costs (negative, significant correlation for 9% of plans).

Among 2050 TDFs, which had substantial equity exposure (commonly around 90%), investor sensitivity was much more mitigated (positive, significant correlation for 14% of plans) in contrast to growth funds. That is, participants were more likely to stay in the plan, despite a dent in the value, comparable to the pattern of investors in large-cap equity funds.

Investors in the 2030 TDF (near retirement) appeared to be more sensitive to the market volatility. Workers likely pay more attention to retirement issues as they get closer to retirement,[3] and they are presumably more alert to a potential loss – greater risk in dollar terms given their usually bigger account balances. A possible side effect is that they may trade more frequently out of anxiety over market changes.

Investor sensitivity was overall lower among plans sponsored in the “financial” sector than average, while higher in the “consumer” sector. This may reflect the effect of financial literacy on participants’ actions. Other sectors had fewer observations than sufficient for a robust inference.

### FIGURE 4: PREVALENCE OF RETURN-CHASING BEHAVIOR (% OF PLANS BY CORRELATIONS WITH MARKET)

| Investment Options | SV/MM | Small/Mid Growth | Large, Value/Blend | 2030 TDF | 2050 TDF |
|---|---|---|---|---|---|
| PS | 0% | 35% | 13% | 29% | 14% |
| NS | 44% | 4% | 9% | 2% | 0% |
| Obs. | 71 | 68 | 70 | 52 | 51 |
| **Plans in financial sector** | | | | | |
| PS | 0% | 29% | 0% | 27% | 9% |
| NS | 46% | 0% | 25% | 0% | 0% |
| Obs. | 13 | 14 | 12 | 11 | 11 |
| **Plans in consumer sector** | | | | | |
| PS | 0% | 37% | 15% | 36% | 18% |
| NS | 56% | 0% | 5% | 9% | 0% |
| Obs. | 18 | 19 | 20 | 11 | 11 |

Notes: Statistical significance at 10%. PS = positive, significant, NS = negative, significant; others insignificant. Red indicates pro-cyclical actions and green countercyclical.
Source: Systematic analysis based on all 100+ plans available in DC Tracker Data, from Jan. 2015 – Jun. 2016.

### MENU OFFERINGS SHAPE OUTCOMES

“Providing the right investments to help participants achieve retirement goals” is a top priority, said the majority of survey respondents (89%, Deloitte 2015).[4]

What is “right”? In theory, more options provide greater freedom for participants to optimize and diversify their portfolios. In reality, investors have constrained knowledge and time to digest the options and often act on a hunch.

To craft an investment menu to accommodate and empower workers, plan sponsors may wish to consider a few references out of the above statistical exercises:

- For similar types of funds, investors across plans utilize them in a different fashion – plan features, population demographics, education background, and financial services likely play a role.

- Within a plan, participants behave differently across funds – which options should be offered and in what permutations (ordering) matter.
- TDF investors are less sensitive to market volatility – TDFs are a good default option based on this empirical investor behavior, in addition to their hallmark improvement of automatic asset (re)allocation over time.

The lower sensitivity of TDF investors to market may reflect an anchor effect – investor selections tend to be clustered around the default option and the perceived implicit endorsement of the employer serves as a calm factor.

And even better, some investors understand the mechanism of TDFs and recognize the strategic balance between growth opportunities and risk diversifications. Northern Trust's *Path Forward* survey finds that around 75% of participants agree on the TDF advantages in providing appropriate investment mix in a single package and being more conservative when retirement nears.[5]

**Investment options in DC Plans can be organized to reduce return-chasing action and encourage participants to stay committed for the long term.**

Overall, investment options in DC plans can be organized to reduce return-chasing actions and encourage participants to stay committed for the long term. For instance, greater clarity of the objectives of the options, as in a streamlined "white label" setting, helps participants make informed selections. And a quality low-volatility option, another alternative, as in a factor-based equity strategy, probably works better for the more nervous investors, without sacrifice of growth potential.

Admittedly, being a contrarian isn't easy when there is a massive sell-off. Under the social pressure of conformity, we feel greater self-comfort by following others, and less guilty if we are wrong together (herd behavior; e.g., buying an iPhone because "everyone does that").

How to reduce spontaneous trading, nonetheless? Encourage participants to set aside certain liquidity for emergency needs so that the primary retirement account would not be sacrificed.[6] And put a strategic plan in place – a disciplined approach to investing. Many asset classes have a cycle ("mean reversion") in the medium-long run. Investments made in tough times often turn out delivering good returns. Let's not rush to lock up the loss unless there is a view that the assets are permanently out of favor.

## NORTHERN TRUST RETIREMENT SOLUTIONS

As one of the largest managers of DC assets[7] in the United States, our team has deep expertise in developing innovative answers to challenges faced by many of the world's largest DC plan sponsors. Collectively, these sponsors have entrusted us to manage more than $118 billion and to provide custody and administrative services for more than $297 billion in DC assets. [8] We take a consultative approach to addressing the needs of plan sponsors and participants while offering a suite of solutions – including an inflation-sensitive asset fund and target date funds – aimed at improving retirement outcomes.

## NORTHERN TRUST ASSET MANAGEMENT

Northern Trust Asset Management is a leading global asset management firm serving institutional and individual investors in 29 countries, with $906 billion in assets under management as of June 30, 2016. Northern Trust Asset Management's robust investment capabilities span all markets and asset classes, from passive and factor-based to fundamental active and multi-manager strategies, delivered in multiple vehicles.

### ENDNOTES

[1] Some plans/funds are substantially larger and have larger transactions on a regular basis than the smaller plans/funds. To make them comparable, a statistical standardization is done around average levels, but the variation patterns are preserved.
[2] InvestmentNews. June 24, 2016. "401(k) providers see participant calls surge in wake of historic Brexit."
[3] Saving for retirement isn't the top priority until later ages, according to Brady, et al. 2012. "The Success of the U.S. Retirement System." Investment Company Institute.
[4] Deloitte 2015 Annual Defined Contribution Benchmarking Survey.
[5] *The Path Forward*, Northern Trust Asset Management, 2016.
[6] Multiple tax-favored savings accounts for different purposes are proposed by Bipartisan Policy Center. 2016. "Securing Our Financial Future."
[7] Based on $118 billion in DC assets under management and $297 billion in DC assets under custody as of June 30, 2016.
[8] Pensions & Investments 2016 Special Report on Money Managers appeared in the publication's May 30, 2016, issue and online at www.pionline.com/researchcenter. P&I rankings based on total worldwide assets under management of $875.3 billion as of December 31, 2015. Ranking information reprinted with permission, Pensions & Investments, copyright Crain Communications, Inc.

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