Asset Reclassification and Mutual Fund Flows*

Veronika K. Pool
Vanderbilt University

Alexey Vasilenko
Vanderbilt University

Preliminary draft. Please do not circulate.

March 20, 2025

ABSTRACT

This paper documents substantial asset "reclassification" in the mutual fund industry, exceeding $1.3 trillion in 2021. These reclassification events do not involve investor flows; instead, mutual fund assets are simply converted into twin investment vehicles, such as separate accounts or common investment trusts. Utilizing data on DC retirement plans, we identify two distinct asset reclassification scenarios. In the first, a mutual fund investment option is directly re-designated as an institutional twin. The second involves replacing a mutual fund with a 'feeder fund' that invests in a twin vehicle of the original fund. We find that direct reclassification (the first type) leads to a substantial 13-basis-point reduction in expense ratios. However, when mutual funds are replaced by feeder funds, participants see no expense ratio reduction. Analyzing the implications of asset reclassification for the mutual fund literature, we find that these events distort inferred mutual fund flows and redemptions without reflecting actual asset movements at the investment product level. Failing to account for asset reclassification in flow-based regression analyses can lead to biased estimates, as we demonstrate for 'smart money' tests and flow-performance sensitivity regressions.

JEL Classification: G23
Keywords: mutual funds, twin investment vehicles, asset reclassification, fund flows

*Veronika K. Pool is at the Owen Graduate School of Management, Vanderbilt University; Email: veronika.pool@vanderbilt.edu. Alexey Vasilenko is at the Owen Graduate School of Management, Vanderbilt University; Email: alexey.vasilenko@vanderbilt.edu.

1 Introduction

Over the past two decades, institutional-focused investment vehicles like collective trusts and separate accounts have seen remarkable growth. Their combined net assets surged from $13.2 trillion to over $28.2 trillion between 2009 and 2021.[1] This growth partially stems from the creation of twin investment vehicles for existing mutual funds. In 2023, one-third of assets in institutional-focused vehicles were held in twin vehicles that employ similar investment strategies but operate under less stringent regulation, leading to reduced operational costs.[2]

The factors driving the growing popularity of twin vehicles and their impact on the mutual fund industry are not fully understood. Asset managers may create these vehicles to attract new clients from competitors. Alternatively, they may simply shift existing mutual fund assets into these vehicles to renegotiate contracts with existing clients. The latter scenario represents "asset reclassification," where assets shift to twin vehicles without actual asset movements at the investment product level. This raises the following questions: How much of the twin vehicle growth stems from asset reclassification? What benefits do existing mutual fund clients derive from such reclassification? Furthermore, how does asset reclassification impact inference in the mutual fund literature, specifically, the measurement of mutual fund flows and subsequent regression analyses involving these flows?

In this paper, we document a substantial reclassification of assets between mutual funds and their twin vehicles, with asset reclassification accounting for more than half of the assets in open and closed twin vehicle accounts. We find that investor benefits from asset reclassification depend on whether they invest directly in twin vehicles or through "feeder funds" of twin vehicles: reclassifying assets from mutual funds directly to twin vehicles results in a significantly lower expense ratio, whereas reclassifying assets to the feeder funds of twin

[1] The data regarding assets in institutional-focused investment vehicles comes from the author's calculations, utilizing aggregated information from the Morningstar Direct database and Form 5500 filings.

[2] Source: the Morningstar Direct database.

vehicles does not provide any cost reduction to investors. In addition, we demonstrate that adjusting for asset reclassification has important methodological implications for measuring mutual fund flows and flow-based regression analyses.

To investigate asset reclassification, we combine data on mutual funds and institutional-focused vehicles with data on defined contribution (DC) retirement plans, which are common clients for both types of vehicles. Our primary source for data on mutual funds and institutional-focused vehicles is the Morningstar Direct database. For mutual funds, Morningstar provides monthly data on total net assets, returns, sales, and redemptions, as well as detailed fund characteristics. Data on institutional-focused vehicles from Morningstar include monthly fund-level total net assets and returns, with linkages to mutual funds via investment product ID. Morningstar also provides quarterly investment product-level information for the consolidated institutional-focused vehicle segment, such as assets, total accounts, the number of accounts opened and closed, and assets in opened and closed accounts. Our sample includes 16,576 mutual funds and 24,959 institutional-focused vehicles, covering the period from January 2000 to December 2022.

To examine asset reclassification from the client perspective, we additionally employ data from the BrightScope Defined Contribution Plan Database combined with Form 5500 filings. The BrightScope database provides data on investment menu options in DC retirement plans, which we merge with each plan's Form 5500 filings. Our combined sample comprises 5,904,410 menu options across 116,852 401(k) and 403(b) plans over the period from 2009 to 2022. Schedule D of each plan's Form 5500 filing documents plan positions in Direct Filing Entities, which may function as master institutional-focused vehicles or their feeder funds. These entities often file their own Form 5500, enabling us to classify investment options in DC plan menus. Through analysis of asset allocation data from each entity's Form 5500 Schedule H, we distinguish between master institutional-focused vehicles and their corresponding feeder funds.

Investigating asset reclassification from the client perspective, we identify two distinct asset reclassification scenarios in DC retirement plans. In the first scenario, a mutual fund investment option is directly replaced by its twin investment vehicle. The second involves replacing a mutual fund with a feeder fund that invests in the twin vehicle of the original fund. We find that the first asset reclassification scenario typically occurs with larger options in terms of size, particularly affecting target-date funds. The second asset reclassification scenario is distributed more evenly across various investment strategies and occurs with smaller options than the first scenario. Regarding fee implications, direct reclassification to twin vehicles yields a substantial 13 basis point reduction in expense ratios. However, when mutual funds are replaced by feeder funds, participants see no expense ratio reduction.

Analyzing the implications of asset reclassification at the mutual fund level, we find that asset reclassification in DC retirement plans from mutual funds to twin vehicles distorts mutual fund flows and redemptions without reflecting actual asset movements at the investment product level. Additionally, we confirm that quarterly account openings in twin vehicles increase with asset reclassification from mutual funds to these vehicles. Asset reclassification cases in DC retirement plans represent only a fraction of total asset reclassification at the mutual fund level. To infer the unobservable total reclassified assets at this level, we develop a procedure based on two facts. First, asset reclassification should not affect total investment product assets (the combined assets of mutual funds and their twin vehicles), as asset reclassification does not represent actual asset flows. Second, asset reclassification is reflected in twin vehicle accounts. It means that a portion of assets in opened and closed accounts represent asset reclassification and do not reflect a change in investment product assets, whereas the remainder contributes to a change in investment product assets. Assets in open twin vehicle accounts (excluding those related to asset reclassification) increase investment product assets, while assets in closed accounts (excluding those related to asset reclassification) decrease investment product assets.

Based on these facts, we employ the following procedure to infer the unobservable total reclassified assets at the mutual fund level. We begin by estimating the shares of assets in opened and closed twin vehicle accounts contributing to investment product flows. We then calculate the shares related to asset reclassification as one minus the shares of assets in opened and closed twin vehicle accounts contributing to investment product flows. The amounts of reclassified assets from mutual funds to twin vehicles, as well as from twin vehicles back to mutual funds, are calculated by multiplying the respective shares related to asset reclassification by the respective opened or closed account assets. We estimate that the average annual reclassified assets for U.S. mutual funds with twin vehicles exceeded $1 trillion from 2010-2021. This number significantly surpasses the average annual TNAs of fund mergers, approximately 60 billion, during the same period.

After quantifying asset reclassification at both fund and aggregate levels, we demonstrate that adjusting for asset reclassification has important methodological implications for regression analyses using fund flows. Asset reclassification negatively correlates with standard fund flows, resembling a non-classical measurement error. We investigate potential biases in regressions using unadjusted fund flows, in which asset reclassification acts as a measurement error. When flows serve as an explanatory variable, the measurement error negatively correlated with standard fund flows inflates true estimates (Pischke, 2007), as we demonstrate for the relation between flows and future performance (Gruber, 1996; Zheng, 1999; Keswani and Stolin, 2008). We then analyze scenarios in which mutual fund flows serve as a dependent variable, focusing on flow-performance sensitivity. A regression utilizing reclassification-adjusted flows demonstrates a 14-24% greater flow-performance sensitivity than one employing unadjusted flows.

Our study contributes to several strands of the literature. First, it adds to the literature on institutional investment products. Numerous studies investigate performance (e.g., Busse et al., 2010; Peterson et al., 2011; Elton et al., 2013; Gerakos et al., 2021), flow determinants

(Fedyk, 2024), and investment consultants' recommendations within the realm of institutional investment products (Jenkinson et al., 2016). A number of studies in this literature examine twin investment vehicles. Huang et al. (2023) show that including twin vehicle assets reduces fund-level diminishing returns to scale in mutual funds up to 90%. Jones et al. (2023) find structural differences explain outperformance of separately managed accounts over corresponding mutual funds. Rohleder et al. (2023) demonstrate joint underperformance of "fraternal twin" vehicles and their corresponding mutual funds (have the same fund family, manager, and investment objective, but different portfolios) compared to "identical twin" vehicles and their corresponding mutual funds (have identical portfolios in addition to the fund family, manager, and investment objective). Tian and Shi (2024) examine how collective investment trusts replace mutual funds in 401(k) plans. We contribute to this literature by documenting asset reclassification between mutual funds and twin investment vehicles and demonstrate the methodological importance of adjusting for asset reclassification in regression analyses using fund flows.

Second, our paper contributes to the literature investigating the determinants of menu design in DC retirement plans.[3] Several studies demonstrate that plan providers' incentives affect plan menus (e.g., Cohen and Schmidt, 2009; Pool et al., 2016, 2022). Bhattacharya and Illanes (2022) demonstrate that imperfect market competition for recordkeeping can result in low plan quality. A few papers also examine the role of employer-related factors in the plan menu design, such as transaction costs when selecting and switching plan providers (Yang, 2023), employers' willingness to pay for plan quality (Bhattacharya and Illanes, 2022), and litigation risk (Gropper, 2023). This paper investigates how asset reclassification shapes DC retirement plan menus and demonstrates that mutual fund options are frequently replaced with their twin investment vehicles. Our analysis reveals that the distribution of benefits from asset reclassification varies depending on investment option structure. Options invested directly in

[3]Reuter (2024) reviews the broad literature on DC retirement plan design and participant behavior.

mutual funds and their twin vehicles experience substantial fee reductions. Conversely, when reclassification occurs through feeder funds, participants see no fee reductions.

Third, our paper adds to the literature highlighting problems in mutual fund databases. Multiple studies demonstrate survivorship bias in commonly employed mutual fund datasets (e.g., Grinblatt and Titman, 1989; Brown et al., 1992; Elton et al., 1996). Elton et al. (2001) identify omission return bias and inaccurate merger months in the CRSP Survivor Bias Free U.S. Mutual Fund Database. Evans (2010) documents incubation bias in reported mutual fund returns using CRSP data. Schwarz and Potter (2016) reveal discrepancies between CRSP and Thomson databases and SEC filings. Specifically, they find that CRSP and Thomson databases include many voluntarily reported portfolios absent from SEC filings while missing numerous SEC-filed portfolios. Our study extends this literature by demonstrating that reported mutual fund sales, redemptions, and asset changes may not always accurately reflect actual asset movements, emphasizing the importance of improving mutual fund data reporting standards.

Finally, our paper contributes to the extensive literature on mutual fund flows. Christoffersen et al. (2014) provide a comprehensive review of this literature. We contribute to this literature by demonstrating that adjusting for asset reclassification has important methodological implications for regression analyses using fund flows.

The rest of the paper is structured as follows. Section 2 discusses the institutional background of institutional-focused vehicles. Section 3 explains our data. In Section 4, we analyze asset reclassification in DC retirement plans from the client's perspective and examine how it appears in mutual fund and twin vehicle variables. Section 5 describes how we infer the magnitude of asset reclassification at the mutual fund and aggregate levels. Section 6 discusses the methodological implications of adjusting for asset reclassification in regression analyses using fund flows. Section 7 offers concluding remarks.

2 Institutional Background: Collective Trusts and Separate Accounts

The terms "collective trusts" and "separate accounts" are umbrella designations encompassing several distinct institutional-focused investment vehicles. "Collective trusts" may refer to collective investment trusts or common trust funds, while "separate accounts" can denote separately managed accounts or pooled separate accounts. We provide institutional background for each vehicle and clarify their structural, operational, and regulatory differences.

2.1 Collective Investment Trusts

"Collective investment trusts" (CITs) are tax-exempt, pooled investment vehicles established by banks or trust companies. Often managed by the same asset managers as mutual funds, CITs are available only to qualified retirement plans, including defined benefit, 401(k), and 457(b) plans, with potential expansion to 403(b) plans pending legislation.

CITs originated in the 1920s when regulators allowed banks to manage deceased customers' assets.[4] Their use for pension savings expanded post-WWII with the rise of employer-sponsored retirement plans. In 2000, the National Securities Clearing Corporation's inclusion of CITs in its trading platform improved tracking for qualified investors.

CITs offer lower fees than mutual funds, making them an appealing option for retirement plans aiming to minimize expenses and reduce litigation risks related to these expenses. Consequently, CITs have grown significantly in the retirement space, reaching $9 trillion in 2021.[5] The fee difference primarily stems from reduced operational expenses due to lighter regulation and reporting standards.

Unlike mutual funds, CITs operate outside SEC regulation and are subject to fragmented

[4]Shnitser (2023) provides a comprehensive overview of CIT history and regulation.
[5]Based on data from Form 5500.

oversight by various regulatory authorities. The Office of the Comptroller of the Currency regulates CITs established by national banks or trust companies, while state regulators oversee CITs created by state-chartered institutions. Additionally, the Department of Labor regulates CITs holding assets of retirement plans covered by the Employee Retirement Income Security Act of 1974. This regulatory framework results in significantly lower oversight and reporting requirements, including no public performance disclosure.

Overall, CITs offer lower fees and less transparency than mutual funds, with lighter regulation, while remaining similar to institutional share classes of mutual funds.

2.2 Common Trust Funds

Common trust funds function similarly to collective investment trusts in operational and regulatory aspects, but with one key distinction: they accept investments from a broader range of investors, including foundations, corporations, endowments, asset aggregators, and high net worth individuals.[6]

2.3 Separately Managed Accounts

"Separately managed accounts" (SMAs) are investment portfolios managed by professional asset managers in accounts designated solely for a single investor. SA investors directly own underlying securities, contrasting with mutual funds' pooled ownership structure. Originating in the 1970s for high-net-worth individuals, SMAs offer lower fees than mutual funds due to reduced operational expenses from lighter regulation and reporting standards.

Like CITs, SMAs are not registered with the SEC and lack public performance disclosures. Nonetheless, the SEC recently modified Form ADV Part 1 to collect information on SMAs. Since 2017, an investment adviser is required to report the value of assets in SMAs held at a

[6]Source: white paper of the Coalition of Collective Investment Trusts https://www.seic.com/sites/default/files/2022-05/SEI-STC-CCIT-WhitePaper.pdf

single custodian if this value represents at least 10% of total assets in SMAs managed by the investment adviser. In addition, the Department of Labor also regulates SMAs holding ERISA-covered retirement plan assets.

An important distinction between CITs and SMAs is the investor base that these vehicles cater to. While CITs serve specific qualified retirement plans, SMAs cater to a broader range of investors, including CIT-qualified retirement plans, 403(b) plans, other institutional investors, and large retail clients.

2.4 Pooled Separate Accounts

"Pooled separate accounts" (PSAs) are investment vehicles created by life insurance companies where assets from multiple clients are combined in accounts segregated from the insurer's general assets.[7]

PSAs originated in the mid-20th century through state statutes initially designed for variable annuities. The modern PSA evolved in the late 1950s/early 1960s when insurance companies created these vehicles to offer pension clients higher-return portfolios with greater equity exposure than state insurance regulations typically permitted in general accounts. By segregating plan assets, insurers circumvented conservative state investment limitations while providing market-based returns without guaranteeing principal or fixed rates.

PSAs function at the nexus of insurance regulation and ERISA law. State insurance commissioners exercise oversight of these vehicles to protect consumers from potential fraud and other risks. When retirement plan assets are placed within a PSA, ERISA regulations classify these investments as "plan assets," thereby subjecting them to ERISA's fiduciary obligations.

PSAs are only available to qualified pension, profit-sharing, annuity, and certain gov-

[7] An overview of the history and regulation of pooled separate accounts can be found in and Wiedenbeck et al. (2013)

ernment plans. These vehicles, like other institutional investment vehicles, typically offer reduced fee structures due to their lighter regulatory oversight and less demanding reporting requirements. Information regarding their performance is also inaccessible to the general public.

2.5 Master and Feeder Funds

Institutional-focused investment vehicles can be categorized into two distinct categories. The first category encompasses vehicles that make direct investments in securities such as stocks, bonds, or other financial instruments ("master" funds). This category also includes target-date and asset allocation investment products that function as fund-of-funds structures, investing in other underlying investment vehicles. These institutional vehicles from the first category may serve as the twin vehicles of mutual funds.

The second category of institutional-focused vehicles comprises feeder funds that allocate assets to underlying funds. These funds can function as asset aggregators, pooling capital from smaller investors to access institutional pricing and preferential fee arrangements unavailable to individual participants. Alternatively, financial advisors may establish feeder funds, charging supplementary fees for their advisory services while directing assets into underlying funds.

2.6 Growth of Institutional-Focused Investment Vehicles

To analyze the growth of institutional-focused investment vehicles, we combined Morningstar Direct data on SMAs with data on CITs, PSAs, and other institutional-focused investment vehicles from Form 5500 filings collected by the Department of Labor.[8]

Figure 1 illustrates the growth of total net assets across four institutional-focused invest-

[8]Although CIT data is also available in Morningstar Direct, Form 5500 filings provide more comprehensive coverage of these investment vehicles.

ment vehicle categories from 2009 to 2022: SMAs, CITs, PSAs, and other direct vehicles. Over the analyzed period, institutional-focused investment vehicles exhibited a consistent growth in combined assets, with SMAs holding the largest share among the four categories, followed by CITs. PSAs maintain the smallest assets. SMAs' dominant position can be attributed to their broader investor accessibility compared to the more restricted eligibility criteria of CITs and PSAs. Notably, CITs have been the primary driver of recent growth in institutional-focused vehicles, reflecting their increasing adoption by Defined Contribution (DC) retirement plans in recent years.

INSERT FIGURE 1 HERE

Figure 2 illustrates the changing distribution of assets in DC retirement plans allocated across individual assets and five investment vehicle categories from 2009 to 2022: mutual funds, CITs, PSAs, other direct vehicles, and fiduciary vehicles. This figure does not display SMAs, which do not appear in Form 5500 filings because their assets are typically reported as direct plan assets rather than being classified as an investment vehicle. The results reveal that the percentage of assets allocated to CITs has consistently increased throughout the sample period, primarily because CITs have been displacing mutual funds and individual assets in recent years. Figure A.4 in the Appendix demonstrates similar trends for the sample of DC retirement plans with continuous annual Form 5500 filings throughout the 2009-2022 period.

INSERT FIGURE 2 HERE

3 Data

This section describes three types of data used in our empirical analysis. First, we employ mutual fund data from the Morningstar Direct database. Second, we utilize institutional-

focused investment vehicle data from the Morningstar Direct. Finally, we employ DC retirement plan data compiled from Form 5500 filings and the BrightScope Beacon dataset.

3.1 Mutual Fund Data

Mutual fund data is sourced from the Morningstar Direct database, encompassing active and inactive U.S. mutual funds from January 2000 through December 2022. The dataset provides share-class level historical data on monthly gross and net returns, monthly total net assets, and annual expense ratios, along with share-class characteristics such as inception dates. At the fund level, the Morningstar database supplies historical data tracking monthly total net assets, sales, redemptions, alongside fund characteristics including detailed investment strategy classifications.

We calculate fund-level gross and net returns by averaging share class-level returns weighted by share class TNA. Fund age is calculated as the time elapsed since the inception date of the fund's oldest share class. We employ the Global Broad Category Group classification to define the primary asset class for each fund and the more detailed Morningstar Category classification to identify and group funds pursuing comparable investment strategies.

For our analysis, we employ several flow measures. First, we calculate monthly mutual fund flows as follows:

$$F_{i,t} = \frac{TNA_{i,t} - (1 + r_{i,t})TNA_{i,t-1} - MGN_{i,t}}{(1 + r_{i,t})TNA_{i,t-1}} \tag{1}$$

where $TNA_{i,t}$ represents the total net assets of fund i in month t. $r_{i,t}$ denotes the net return of fund i in month t. $MGN_{i,t}$ is the inflow from fund mergers of fund i in month t.

To examine how asset reclassification is reported in mutual fund variables, we employ

three other flow measures. We define the redemption and sale flows as:

$$F_{\text{Redemptions},i,t} = \frac{\text{Redemptions}_{i,t}}{(1+r_{i,t})TNA_{i,t-1}} \tag{2}$$

$$F_{\text{Sales},i,t} = \frac{\text{Sales}_{i,t}}{(1+r_{i,t})TNA_{i,t-1}} \tag{3}$$

where $\text{Redemptions}_{i,t}$ and $\text{Sales}_{i,t}$ represent the total redemptions and total sales of fund i in month t.

We then calculate the abnormal flows as the component of the standard flow measure that cannot be explained by inflows due to sales and outflows due to redemptions:

$$F_{\text{Abnormal},i,t} = F_{i,t} - F_{\text{Sales},i,t} + F_{\text{Redemptions},i,t} \tag{4}$$

where $F_{i,t}$ represents the standard flow measure from equation 1 for fund i in month t.

Panel A in Table 1 reports summary statistics for the Morningstar mutual fund data. Continuous variables are winsorized at the 1st and 99th percentiles to remove outliers. Our sample includes 1,962,484 observations across 16,576 distinct mutual funds. The average monthly gross and net returns are 0.55% and 0.46%, respectively. The average mutual fund has total net assets (TNA) of $1,190.82 million, though the median of $196.59 million suggests a right-skewed distribution. Monthly sales and redemptions average $30.96 million and $28.95 million respectively. The sample is predominantly comprised of equity funds (54%), followed by fixed income (27%), allocation (15%), and other strategies (4%). The average fund age is 12.51 years.

INSERT TABLE 1 HERE

3.2 Institutional-Focused Vehicle Data

In addition to mutual fund data, the Morningstar Direct provides comprehensive data on institutional-focused investment vehicles. The Morningstar universe covers CITs and SMAs, but not PSAs.

At the vehicle level, the Morningstar database supplies historical data including monthly gross and net returns, monthly total net assets, and vehicle characteristics such as investment strategy classifications. The database also provides inception dates at the share class level, which we use to calculate vehicle age as the time elapsed since the inception date of the vehicle's oldest share class.

At the strategy level, the Morningstar database supplies the following quarterly historical information on the non-mutual fund part of an investment strategy: total number of strategy accounts, taxable and tax-exempt accounts, newly opened and closed accounts, and assets categorized by account type, including assets in opened and closed accounts.

For our analysis, we calculate quarterly investment product-level flows as follows:

$$F_{s,t} = \frac{\sum\limits_{j\in\{mf,cit,sma\}} TNA_{j,s,t} - \sum\limits_{j\in\{mf,cit,sma\}} (1+r_{j,s,t})TNA_{j,s,t-1} - \sum\limits_{j\in\{mf,cit,sma\}} MGN_{j,s,t}}{\sum\limits_{j\in\{mf,cit,sma\}} (1+r_{j,s,t})TNA_{j,s,t-1}} \quad (5)$$

where $TNA_{j,s,t}$ represents the total net assets of strategy s in quarter t for investment vehicle type j, which can be mutual fund ($j = mf$), CIT ($j = cit$), or SMA ($j = sma$). $r_{j,s,t}$ denotes the net return of strategy s in quarter t for investment vehicle type j. $MGN_{j,s,t}$ is the inflow from vehicle mergers of strategy s in quarter t for investment vehicle type j.

We also calculate flows due to opened and closed twin vehicle accounts as follows:

$$F_{\text{Opened},s,t} = \frac{\text{Assets in Opened Accounts}_{s,t}}{\sum_{j\in\{mf,cit,sma\}} (1+r_{j,s,t})TNA_{j,s,t-1}} \tag{6}$$

$$F_{\text{Closed},s,t} = \frac{\text{Assets in Closed Accounts}_{s,t}}{\sum_{j\in\{mf,cit,sma\}} (1+r_{j,s,t})TNA_{j,s,t-1}} \tag{7}$$

where $\text{Assets in Opened Accounts}_{s,t}$ and $\text{Assets in Closed Accounts}_{s,t}$ represent assets in opened and closed twin vehicle accounts, respectively, of strategy s in quarter t.

Panel B in Table 1 reports summary statistics for the Morningstar institutional-focused vehicle data. Continuous variables are winsorized at the 1st and 99th percentiles to remove outliers. Our sample includes 3,094,725 observations across 24,959 distinct institutional-focused vehicles, including 5,072 CITs and 19,887 SMAs. CITs' average size ($774.47 million) is smaller than mutual funds (in Panel A), with a different strategic composition: 44% equity, 34% allocation, 17% fixed income, and 5% other strategies. CITs are generally younger, with an average age of 7.9 years. SMAs have a larger average size than mutual funds and CITs, amounting to $1,259.04 million. Their strategic distribution resembles mutual funds, with 56% equity, 23% fixed income, 20% allocation, and 2% other strategies. SMAs'average age is 10.2 years. On average, each investment product serves 175.19 institutional-focused vehicle accounts, with 102.64 taxable and 59.34 tax-exempt accounts. Monthly account turnover averages 5.85 accounts lost and 6.03 gained. Average assets in institutional-focused vehicle accounts total $1,925.64 million, with fairly even distribution between taxable accounts ($1,473.88 million) and tax-exempt accounts ($1,396.18 million). The average quarterly asset outflows from institutional-focused vehicle lost accounts is $19.41 million, while assets gained average $23.92 million.

Table B.1 in the Appendix additinally presents summary statistics for two specialized subsamples: mutual funds with twin investment vehicles and the corresponding institutional-

focused vehicles that are twins for these mutual funds. This combined subsample encompasses 3,168 mutual funds alongside their twin vehicles, consisting of 600 CITs and 2,915 SMAs. The data reveals that mutual funds with twin institutional vehicles tend to be larger, more equity-focused, and more established than the broader universe of mutual funds.

3.3 Data on DC Retirement Plans

In addition to the Morningstar data on mutual funds and institutional-focused vehicles, we leverage data on DC retirement plans obtained from Form 5500 filings and the BrightScope Beacon database.

Form 5500 is a mandatory filing requirement for private-sector employee benefit plans regulated under the Employee Retirement Income Security Act of 1974 (ERISA). We focus exclusively on large plans with at least 100 participants, as these plans must file Schedule H containing detailed financial information beyond the standard Form 5500 requirements. Schedule H captures detailed financial information across plan assets, liabilities, income, and expenses. The asset value section categorizes investments by type (including U.S. Government securities, corporate debt instruments, and various equity holdings) and provides aggregate values for investments in common/collective trusts, pooled separate accounts, and registered investment companies such as mutual funds. Notably, assets held in separately managed accounts are typically reported as direct plan assets rather than being classified as investment vehicles.[9]

For plans filing Schedule H, the list of investment options in a plan menu is typically attached as an appendix to Form 5500, but extracting this information presents significant technical challenges. To address this limitation, we supplement our Form 5500 data with detailed investment menu information from the BrightScope Beacon database, which collects

[9]According to Form 5500 filing instructions, SMAs may be reported either as individual Master Trust Investment Accounts or as direct plan assets. We perform a textual analysis of Master Trust Investment Account names and determine that the majority of these accounts are not SMAs.

DC retirement plan menu data from audited Form 5500 filings. We merge both datasets following a two-stage process: 1) we first attempt to merge datasets using the ending date of each plan's fiscal year; 2) if the initial merge is unsuccessful, we broaden the matching criteria to merge based on fiscal year alone.

Panel A in Table 2 reports summary statistics for the combined data on menu options in DC retirement plans obtained from Form 5500 filings and the BrightScope Beacon database. Continuous variables are winsorized at the 1st and 99th percentiles. The sample comprises 5,904,410 menu options across 116,852 401(k) and 403(b) plans from 2009 to 2022. The average option balance is \$1.74 million, with a median of \$0.18 million, indicating a right-skewed distribution where most options hold relatively small amounts while a few options manage substantial assets. The expense ratio averages 0.63% (median 0.64%), suggesting a fairly symmetric distribution of fees across options. The typical plan in our sample has total assets of \$74.30 million, though the median of \$12.39 million reveals considerable skewness in plan size. Plans offer an average of 37.15 investment options (median 30.00), with considerable variation as indicated by the standard deviation of 27.24 options. The number of options ranges from a minimum of 11 to a maximum of 199.

INSERT TABLE 2 HERE

If a DC retirement plan invests in institutional investment vehicles, it must disclose these holdings in Schedule D of Form 5500.[10] This Schedule reports the plan's end-of-year dollar value interest in each institutional vehicle along with the detailed information about the vehicle, including the vehicle's code (PN), name, sponsor company code (EIN), and sponsor company name. Notably, Institutional-focused vehicles can also file their own Form 5500 forms to reduce reporting burdens for participating plans. To analyze DC plan investment options representing institutional-focused vehicles, we link each plan's Schedule D disclosures

[10]Institutional-focused vehicles are classified as "Direct Filing Entities" (DFEs) in Form 5500 filings.

with the corresponding Form 5500 filings submitted by the institutional vehicles themselves, matching records by both sponsor company EIN and vehicle PN.

We then select the subsample of menu options in DC retirement plans that meet three specific criteria: (1) plans must offer at least one mutual fund option and one institutional-focused investment vehicle during the 2009-2022 period; (2) all institutional-focused investment vehicles in these plans' menus must file their own Form 5500 reports; (3) each institutional-focused investment vehicle offered in these plans' menus represents a single underlying investment strategy, which we identified through textual analysis of the vehicle names

For each institutional-focused vehicle, we also determine its structure (master or feeder funds) using the vehicle's Form 5500 Schedule H. For non-allocation strategies (such as equity or fixed income), we classify vehicles invested in individual securities as master funds, while those invested in underlying funds are classified as feeder funds. For allocation strategies (such as target-date or 40/60 allocation funds), we conduct textual analysis of vehicle and sponsor company names to identify the structure. We classify vehicles managed by their sponsor company as master funds, while those managed by a different asset manager are classified as feeder funds.

Panel B in Table 2 reports summary statistics for the subsample of menu options in DC retirement plans, in which we can observe both the plan menu composition and the structural classification of all institutional-focused vehicles.

4 Asset Reclassification Mechanism

This section investigates asset reclassification in DC retirement plans from the client perspective. We analyze which investment options undergo reclassification and examine the benefits that plan participants receive from asset reclassification. We then extend our analysis to explore the implications of asset reclassification at the mutual fund level.

4.1 Asset Reclassification in DC Retirement Plans

Investigating asset reclassification from the client perspective, we identify two distinct asset reclassification scenarios in DC retirement plans. In the first case, a mutual fund option is directly replaced by its twin vehicle. The second involves replacing a mutual fund with a fiduciary structure that invests in the twin vehicle of the original fund. Both scenarios can operate in reverse: in the first scenario, when a mutual fund option replaces a twin vehicle, and in the second scenario, when the original fund replaces a fiduciary structure that had invested in the fund's twin vehicle.

We first examine the characteristics of menu options that undergo both asset reclassification scenarios. Table 3 presents descriptive statistics for mutual fund options in DC plan menus that are being reclassified to twin investment vehicles in our subsample of DC retirement plans, in which we can observe both the plan menu composition and the structural classification of all institutional-focused vehicles. Column 1 reports mean statistics for the first asset reclassification scenario, where a mutual fund investment option is directly replaced by its twin investment vehicle. Column 2 presents mean statistics for the second asset reclassification scenario, where a mutual fund option is replaced with a feeder fund that invests in the twin vehicle of the original fund. Column 3 reports mean statistics for mutual fund options that do not undergo any asset reclassification.

The results indicate that the first asset reclassification scenario typically occurs with larger options in terms of size, particularly affecting target-date funds. The second asset reclassification scenario is distributed more evenly across various investment strategies and occurs with smaller options than the first scenario. Table B.2 in the Appendix additionally presents descriptive statistics for twin vehicle options that are being reclassified to mutual fund options.

INSERT TABLE 3 HERE

To examine the benefits that plan participants receive from asset reclassification, we employ the following panel regression model at the investment option-year level:

$$\text{Expense Ratio}_{j,t} = \beta \mathbb{1}_{j,t}(\text{Inst. Vehicle}) + \alpha_j + \alpha_t + \epsilon_{j,t} \tag{8}$$

where $\text{Expense Ratio}_{j,t}$ represents the expense ratio of investment option j in year t. $\mathbb{1}_{j,t}(\text{Inst. Vehicle})$ denotes an indicator variable, which equals 1 if the investment option is an institutional-focused vehicle and 0 otherwise. β is the parameter of interest capturing the difference in expense ratios between a mutual fund option and a twin vehicle option. α_j are investment option fixed effects that control for time-invariant heterogeneity at the investment option level. α_t indicate year fixed effects that control for common time-varying factors. Standard errors are clustered at the investment option level.

Table 4 reports coefficient estimates from the OLS regression (8) examining the relation between asset reclassification in DC retirement plans and expense ratios. The unit of observation in Columns 1-3 is the investment option-year, while the sample in Columns 4-6 is restricted to only the first and last observations for each investment option to account for potential lags in expense ratio updates within the Brightscope dataset. A specification in Columns 2 and 5 incorporates separate indicator variables for master institutional-focused vehicles and feeder fund institutional-focused investment vehicles. In Columns 3 and 6, the feeder fund institutional-focused vehicle indicator is replaced with two more granular indicators that distinguish between feeder funds that allocate some assets to master institutional-focused investments and those with zero allocation to master institutional-focused investments.

The results demonstrate a significant negative relationship between institutional-focused investment vehicles and expense ratios. Specifically, institutional vehicles are associated with expense ratios that are 7-9 basis points lower than non-institutional vehicles (Columns 1 and 4). When disaggregating institutional-focused vehicles into subcategories (Columns 2-3

and 5-6), master institutional-focused vehicles show the largest reduction in expense ratios, with coefficients of -9 to -13 basis points. Feeder fund institutional vehicles also exhibit significantly lower expense ratios (-3 basis points) compared to non-institutional vehicles. However, this effect varies depending on whether these feeder funds allocate assets to master institutional-focused vehicles. Specifically, feeder funds without institutional-focused vehicle allocations show a significant reduction in expense ratios (-5 reduction points), while those with institutional-focused vehicle allocations show no statistically significant difference.

In summary, based on specifications that account for potential lags in expense ratio updates (Column 6), direct reclassification to twin vehicles yields a substantial 13 basis point reduction in expense ratios. However, when mutual funds are replaced by the feeder funds of twin vehicles, participants see no expense ratio reduction.

INSERT TABLE 4 HERE

Figure 3 illustrates the distribution of feeder fund sponsors, categorized as either recordkeepers or non-recordkeepers. We determine whether a feeder fund sponsor is a recordkeeper by conducting textual analysis of both the sponsor and recordkeeper names. The results indicate that more than 85% of feeder fund sponsors are recordkeepers.

INSERT FIGURE 3 HERE

4.2 Implications of Asset Reclassification at the Mutual Fund Level

We explore the implications of asset reclassification at the mutual fund level by examining the relation between the share of reclassified assets observable through our data on DC retirement plans and mutual fund flow measures. Since our data for DC retirement plans is at the annual level, we cannot pinpoint the exact month when asset reclassification occurs. To address this limitation, we consider the following mutual fund flow measures at the annual level: the

annual minimum of monthly fund flows, the annual maximum of monthly redemption flows (equation (2)), and the annual maximum of quarterly investment product flows due to opened accounts in twin vehicles (equation (6)). Our regression specification is as follows:

$$Y_{i,t} = \beta S_{i,t} + \gamma X_{i,t} + \alpha_{Category} + \alpha_t + \epsilon_{i,t} \tag{9}$$

where $Y_{i,t}$ represents the flow measure of mutual fund flow i in year t. $S_{i,t}$ denotes the ratio of annual total assets reclassified from mutual funds to twin investment vehicles (observable through our data on DC retirement plans) relative to mutual fund assets at the previous year-end. β is the parameter of interest capturing the relation between the share of reclassified assets observable through our data on DC retirement plans and mutual fund flow measures. $X_{i,t}$ is the vector of control variables including fund age and log of fund assets. $\alpha_{Category}$ are the Morningstar category fixed effects that control for time-invariant heterogeneity at the Morningstar category level. α_t indicate year fixed effects that control for common time-varying factors. Standard errors are clustered at the fund level. The sample includes only observations where DC retirement plan data indicates that more than 1% of mutual fund assets are reclassified.

Table 5 reports coefficient estimates from the OLS regression (9) examining the relation between the share of reclassified assets observable through our data on DC retirement plans and the following flow measures: the annual minimum of monthly fund flows in Columns 1 and 2, the annual maximum of monthly redemption flows in Columns 3 and 4, the annual maximum of quarterly investment product flows due to opened accounts in twin vehicles in Columns 5 and 6. The results in Columns 1-4 demonstrate that when DC plans reclassify assets from mutual funds to their twin vehicles, it distorts both mutual fund flows and redemptions. Additionally, the results in Columns 5-6 confirm that quarterly account openings in twin vehicles increase with asset reclassification from mutual funds to these vehicles.

INSERT TABLE 5 HERE

5 Asset Reclassification Magnitude

5.1 Inferring Asset Reclassification for Mutual Funds with Twin Vehicles

Asset reclassification cases in DC retirement plans represent only a fraction of total asset reclassification at the mutual fund level. To infer the unobservable total reclassified assets at this level, we develop a procedure based on two facts. First, asset reclassification should not affect total investment product assets (the combined assets of mutual funds and their twin vehicles), as asset reclassification does not represent actual asset flows. Second, as shown in the previous results, asset reclassification is reflected in twin vehicle accounts. It means that a portion of assets in opened and closed accounts represent asset reclassification and do not reflect a change in investment product assets, whereas the remainder contributes to a change in investment product assets. Assets in open twin vehicle accounts (excluding those related to asset reclassification) increase investment product assets, while assets in closed accounts (excluding those related to asset reclassification) decrease investment product assets. Based on these facts, we employ the following procedure to infer the unobservable total reclassified assets at the mutual fund level. We begin by estimating the shares of assets in opened and closed twin vehicle accounts contributing to investment product flows as follows:

$$F_{s,t} = \sum_{\nu \in \{\text{strategy classes}\}} \beta_{1,v} F_{\text{Opened},s,t} \mathbb{1}_{s,t}(v) + \sum_{\nu \in \{\text{strategy classes}\}} \beta_{2,v} F_{\text{Closed},s,t} \mathbb{1}_{s,t}(v) + \gamma X_{s,t} + \alpha_s + \alpha_t + \epsilon_{s,t} \quad (10)$$

where $F_{s,t}$ represents the flow of investment product s in quarter t calculated according to equation (5). $F_{\text{Opened},s,t}$ and $F_{\text{Closed},s,t}$ denote investment product flows attributable to opened and closed accounts, calculated according to equations (6) and (7), respectively. $\mathbb{1}_{s,t}(v)$ is an indicator variable for one of the four strategy classes: equity, fixed income, allocation, and

other. $\beta_{1,v}$ and $\beta_{2,v}$ are the parameters of interest that quantify the shares of assets in opened and closed twin vehicle accounts, respectively, that contribute to investment product flows. $\gamma X_{s,t}$ represents the vector of the following control variables: the log of lagged investment product size and the log of lagged investment product age in years. α_s denotes investment product fixed effects that control for time-invariant heterogeneity at the investment product level. α_t indicates time fixed effects that control for common time-varying factors. Standard errors are clustered at the Morningstar category level.

Table 6 reports coefficient estimates from the OLS regression (10), which quantifies the proportion of investment product flows attributable to assets in opened and closed twin vehicle accounts. In the baseline specifications (Columns 1 and 3), we observe that flows due to assets in opened twin vehicle accounts have a positive and statistically significant impact on overall investment product flows, with coefficients of 0.31 and 0.37, respectively. Conversely, flows attributable to closed twin vehicle accounts demonstrate a negative impact of similar magnitude, with coefficients of -0.33 and -0.39. This suggests that twin vehicle account openings and closures account for roughly one-third of investment product flows, with asset reclassification accounting for the remainder. When examining the heterogeneity across investment strategies (Columns 2 and 4), we find substantial variation in the relation between twin vehicle account activity and investment product flows. Allocation investment products, including target-date funds, exhibit the lowest proportion of investment product flows attributable to assets in opened twin vehicle accounts (with coefficients of 0.04 and 0.11). This suggests that asset reclassification is a particularly frequent phenomenon for these funds.

INSERT TABLE 6 HERE

We then calculate the shares related to asset reclassification as one minus the shares of assets in opened $(1-\beta_{1,\nu})$ and closed $(1-\beta_{2,\nu})$ twin vehicle accounts contributing to investment

product flows. Figure illustrates the percentage of assets in opened (Panel A) and closed (Panel B) twin vehicle accounts across four investment strategy classes (equity, fixed income, allocation, and other) related to asset reclassification. The results indicate that investment products related to the allocation strategy class, such as target-date funds, have the highest percentage of assets in new twin vehicle accounts explained by asset reclassification.

INSERT FIGURE 4 HERE

The amounts of reclassified assets from mutual funds to twin vehicles, as well as from twin vehicles back to mutual funds, are calculated by multiplying the respective shares related to asset reclassification by the respective opened or closed account assets:

$$\textit{Reclassified Assets Out}_{s,t} = (1 - \beta_{1,\nu})\textit{Assets in Opened Accounts}_{s,t} \tag{11}$$

$$\textit{Reclassified Assets In}_{s,t} = (1 - \beta_{2,\nu})\textit{Assets in Closed Accounts}_{s,t} \tag{12}$$

where $\textit{Reclassified Assets Out}_{s,t}$ quantifies the estimated assets transferred from a mutual fund to twin vehicles related to investment product s in quarter t. $\textit{Reclassified Assets In}_{s,t}$ measures the estimated assets transferred from twin vehicles to a mutual fund related to investment product s in quarter t .

The results from the previous section demonstrate that asset reclassification from mutual funds to twin vehicles affect mutual fund redemptions. Based on this evidence, we allocate quarterly asset reclassification from mutual funds to twin vehicles in monthly periods in proportion to mutual fund redemptions.

$$\textit{Reclassified Assets Out}_{i,m} = \textit{Reclassified Assets Out}_{s,t} \times \frac{\textit{Redemptions}_{i,m}}{\textit{Redemptions}_{i,t}} \tag{13}$$

where $\textit{Reclassified Assets Out}_{i,m}$ represents the estimated assets transferred from mutual fund i to twin vehicles in month m within quarter t, while $\textit{Redemptions}_{i,m}$ and $\textit{Redemptions}_{i,t}$

denote the values of redemptions in month m and quarter t, respectively.

Similarly, we allocate quarterly asset reclassification from twin vehicles to mutual funds in monthly periods in proportion to mutual fund sales:

$$Reclassified\ Assets\ In_{i,m} = Reclassified\ Assets\ In_{s,t} \times \frac{Sales_{i,m}}{Sales_{i,t}} \tag{14}$$

where $Reclassified\ Assets\ In_{i,m}$ represents the estimated assets transferred from twin vehicles to mutual fund i in month m within quarter t, while $Sales_{i,m}$ and $Sales_{i,t}$ denote the values of sales in month m and quarter t, respectively.

Finally, we calculate the flow attributable to asset reclassification $F_{\text{Reclassification},i,m}$ of mutual fund i in month m as follows:

$$F_{\text{Reclassification},i,m} = \frac{Reclassified\ Assets\ Out_{i,m} - Reclassified\ Assets\ In_{i,m}}{(1 + r_{i,m})TNA_{i,m-1}} \tag{15}$$

where $TNA_{i,m}$ represents the total net assets of fund i in month m, while $r_{i,m}$ denotes the fund's net return for the same period. Figure 5 plots the distribution of reclassification flows. The sample is limited to investment products with one or more opened or closed accounts in twin investment vehicles during a quarterly period.

INSERT FIGURE 5 HERE

5.2 Aggregate Asset Reclassification

Data regarding twin vehicle accounts is not available for all twin vehicles, complicating the estimation of the aggregate asset reclassification. To address this data limitation, we employ a two-step estimation approach. First, we calculate the annual aggregate value of asset reclassification within the subsample of twin vehicles with available account information. Second, we adjust the annual aggregate value of asset reclassification from the subsample by

multiplying it by the ratio of total assets across all twin investment vehicles to total assets within the subsample with available account information for the corresponding year.

Figure 6 presents the annual aggregate value of asset reclassification between mutual funds and their twin investment vehicles from 2010 to 2021, compared with the annual total value of mutual fund mergers. The average annual reclassified assets for U.S. mutual funds with twin vehicles exceeded $1 trillion from 2010-2021. This number significantly surpasses the average annual TNAs of fund mergers, approximately 60 billion, during the same period.

INSERT FIGURE 6 HERE

We also analyze how accounting for asset reclassification affects the measurement of total net inflows to U.S. mutual funds. We adjust the total net inflows to U.S. mutual funds for asset reclassification by adding annual aggregate asset reclassification from mutual funds to their twin investment vehicles and subtracting annual aggregate asset reclassification from twin vehicles to mutual funds. Figure 7 compares total net inflows to U.S. mutual funds from 2010 to 2021 with and without adjusting for asset reclassification.

INSERT FIGURE 7 HERE

6 Asset Reclassification and Flow-Based Regressions

After quantifying asset reclassification at both fund and aggregate levels, we also investigate the methodological implications of asset reclassification for regression analyses involving fund flows.

We first examine the relation between reclassification flows and standard mutual fund flows. Table 7 presents coefficient estimates from OLS regressions, where the dependent variable is monthly standard mutual fund flows, while the explanatory variable is monthly reclassification flow calculated according to equation (15). The results indicate that that asset

reclassification flows negatively correlate with standard fund flows, resembling a non-classical measurement error.

INSERT TABLE 7 HERE

Following that, we investigate potential biases in regressions using unadjusted fund flows, in which asset reclassification acts as a non-classical measurement error. Specifically, we compare coefficient estimates from OLS regressions involving standard mutual fund flows and adjusted fund flows that account for asset reclassification. The adjusted flows are calculated as follows:

$$\overline{F_{i,t}} = F_{i,t} + F_{\text{Reclassification},i,t} \tag{16}$$

where $F_{i,m}$ represents the standard flow of fund i at time t and $F_{\text{Reclassification},i,t}$ represents the asset reclassification flow for the same fund-time, calculated according to equation (15).

6.1 Bias When Flows Serve as an Explanatory Variable

When flows serve as an explanatory variable, the measurement error negatively correlated with observed fund flows inflates true estimates (Pischke, 2007). We demonstrate it for the relation between flows and future performance (Gruber, 1996; Zheng, 1999; Keswani and Stolin, 2008). Specifically, we consider the following regression specification:

$$Y_{i,t} = \beta F_{i,t-1} + \gamma X_{s,t} + \alpha_i + \alpha_t + \epsilon_{s,t} \tag{17}$$

where $Y_{i,t}$ represents the performance measure of mutual fund i in month t. We employ three performance measures: monthly gross returns, monthly alpha estimated from the CAPM model over 12 future months, and monthly alpha estimated from the Carhart four-factor model over 12 future months. β is the parameter of interest capturing the relation between

between flows and future performance. $X_{s,t}$ denotes the vector of the following control variables: the log of fund size (lagged one period) and the log of fund age in years (lagged one period). α_i are the fund fixed effects that control for time-invariant heterogeneity at the mutual fund level. α_t indicates time fixed effects that control for common time-varying factors. Standard errors are clustered at the fund level.

Table 8 reports coefficient estimates from the OLS regression (17) examining the relation between performance and past flows for active equity mutual funds. The sample comprises active equity mutual funds with twin investment vehicles, for which data on opened and closed twin vehicle accounts is available. The sample period spans from January 2010 through December 2020. The dependent variables are monthly gross returns in Columns 1-2, monthly alpha estimated from the CAPM model over 12 future months in Columns 3-4, and monthly alpha estimated from the Carhart four-factor model over 12 future months in Columns 5-6. In Columns 1, 3, and 5, the explanatory variable is standard monthly fund flows. In Columns 2, 4, and 6, the explanatory variable is monthly fund flows adjusted for asset reclassification (calculated according to equation (15)).

The standard monthly flow measure shows a positive and statistically significant relationship with future monthly gross returns (Column 1), with a coefficient of 0.0039 that is significant at the 5% level. This suggests that, when using the standard flow measure, funds experiencing higher inflows tend to exhibit better subsequent performance. However, when we employ our adjusted monthly flow measure that accounts for asset reclassification (Column 2), the relation remains positive but the coefficient decreases substantially to 0.0012, though it becomes more statistically significant (1% level). This indicates that conventional flow measures may overestimate the relation between flows and future returns. When examining risk-adjusted performance using CAPM alpha (Columns 3-4) and Carhart four-factor alpha (Columns 5-6), neither the standard nor the adjusted flow measures show statistically significant relation with future performance, suggesting that after controlling for

common risk factors, fund flows do not reliably predict future risk-adjusted returns. However, coefficients in specifications using the standard monthly flow measure (Columns 3 and 5) are several times larger in magnitude than those using the adjusted monthly flow measure (Columns 4 and 6): -0.0007 in Column 3 versus -0.0001 in Column 4 for CAPM alpha, and -0.0003 in Column 5 versus -0.0001 in Column 6 for FF4 alpha. In summary, our results demonstrate that when fund flows serve as an independent variable, failing to adjust for asset reclassification artificially inflates the estimated coefficients.

INSERT TABLE 8 HERE

6.2 Bias When Flows Serve as a Dependent Variable

We then analyze scenarios in which mutual fund flows serve as a dependent variable, focusing on the flow-performance sensitivity regressions.

$$F_{i,t} = \beta Y_{i,t-1} + \gamma X_{s,t} + \alpha_i + \alpha_t + \epsilon_{s,t} \tag{18}$$

where $Y_{i,t}$ represents the performance of mutual fund i in month t. β is the parameter of interest quantifying the flow-performance sensitivity. $X_{s,t}$ denotes the vector of the following control variables: the log of fund size (lagged one period) and the log of fund age in years (lagged one period). α_i are the fund fixed effects that control for time-invariant heterogeneity at the mutual fund level. α_t indicate time fixed effects that control for common time-varying factors. Standard errors are clustered at the fund level.

Table 9 reports coefficient estimates from the OLS regression (18) examining the flow to past performance sensitivity for active equity mutual funds. The sample comprises active equity mutual funds with twin investment vehicles, for which data on opened and closed twin vehicle accounts is available. The sample period spans from January 2000 through December 2021. Columns 1-2 report results using standard monthly mutual fund flows as the

dependent variable. Columns 3-4 employ an adjusted flow measure that accounts for asset reclassification, calculated according to equation (15).

In Columns (1) and (2), using standard monthly flows as the dependent variable, the coefficients on lagged monthly gross returns are positive and highly significant (0.155 and 0.172, respectively). This indicates that a 1 percentage point increase in monthly gross returns is associated with a subsequent increase in monthly flows of approximately 0.155 to 0.172 percentage points. When accounting for asset reclassification in Columns (3) and (4), the flow-performance relationship becomes even stronger. The coefficients on lagged monthly gross returns increase to 0.176 and 0.214, suggesting that standard flow measures may underestimate investors' responsiveness to past performance. Overall, the results indicate that a regression utilizing reclassification-adjusted flows demonstrates a 14-24% greater flow-performance sensitivity than one employing unadjusted flows.

INSERT TABLE 9 HERE

7 Conclusion

This paper documents substantial asset "reclassification" in the mutual fund industry, exceeding $1.3 trillion in 2021. These reclassification events do not involve investor flows; instead, mutual fund assets are simply converted into twin investment vehicles, such as separate accounts or common investment trusts.

Utilizing data on DC retirement plans, we identify two distinct asset reclassification scenarios. In the first, a mutual fund investment option is directly re-designated as an institutional twin. The second involves replacing a mutual fund with a 'feeder fund' that invests in a twin vehicle of the original fund. We find that direct reclassification (the first type) leads to a substantial 13-basis-point reduction in expense ratios. However, when mutual funds are replaced by feeder funds, participants see no expense ratio reduction.

Analyzing the implications of asset reclassification for the mutual fund literature, we find that these events substantially distort inferred mutual fund flows and redemptions without reflecting actual asset movements at the investment product level. Failing to account for asset reclassification in flow-based regression analyses can lead to biased estimates, as it negatively correlates with observed fund flows and resembles a non-classical measurement error. When flows serve as an independent variable, as in 'smart money' tests, measurement error - negatively correlated with standard fund flows - artificially inflates true estimates. We then analyze scenarios in which mutual fund flows serve as a dependent variable, focusing on flow-performance sensitivity. A regression utilizing reclassification-adjusted flows demonstrates a 14-24% greater flow-performance sensitivity than one employing unadjusted flows.

References

Bhattacharya, V. and G. Illanes (2022, April). The design of defined contribution plans. Working Paper 29981, National Bureau of Economic Research.

Brown, S. J., W. Goetzmann, R. G. Ibbotson, and S. A. Ross (1992, 05). Survivorship bias in performance studies. *The Review of Financial Studies 5*(4), 553–580.

Busse, J. A., A. Goyal, and S. Wahal (2010). Performance and persistence in institutional investment management. *The Journal of Finance 65*(2), 765–790.

Christoffersen, S. E., D. K. Musto, and R. Wermers (2014). Investor flows to asset managers: Causes and consequences. *Annual Review of Financial Economics 6*(Volume 6, 2014), 289–310.

Cohen, L. and B. Schmidt (2009). Attracting flows by attracting big clients. *The Journal of Finance 64*(5), 2125–2151.

Elton, E. J., M. J. Gruber, and C. R. Blake (1996, 06). Survivor bias and mutual fund performance. *The Review of Financial Studies 9*(4), 1097–1120.

Elton, E. J., M. J. Gruber, and C. R. Blake (2001). A First Look at the Accuracy of the CRSP Mutual Fund Database and a Comparison of the CRSP and Morningstar Mutual Fund Databases. *The Journal of Finance 56*(6), 2415–2430.

Elton, E. J., M. J. Gruber, and C. R. Blake (2013, 09). The Performance of Separate Accounts and Collective Investment Trusts. *Review of Finance 18*(5), 1717–1742.

Evans, R. B. (2010). Mutual fund incubation. *The Journal of Finance 65*(4), 1581–1611.

Fedyk, V. (2024). Heterogeneous asset pricing model preferences by investor type: Evidence from separate accounts.

Gerakos, J., J. T. Linnainmaa, and A. Morse (2021). Asset managers: Institutional performance and factor exposures. *The Journal of Finance 76*(4), 2035–2075.

Grinblatt, M. and S. Titman (1989). Mutual fund performance: An analysis of quarterly portfolio holdings. *The Journal of Business 62*(3), 393–416.

Gropper, M. (2023). Lawyers setting the menu: The effects of litigation risk on employer-sponsored retirement plans. *Available at SSRN 4393420*.

Gruber, M. J. (1996). Another puzzle: The growth in actively managed mutual funds. *The Journal of Finance 51*(3), 783–810.

Huang, S., X. Lu, Y. Song, and H. Xiang (2023). Remeasuring scale in active management.

Jenkinson, T., H. Jones, and J. V. Martinez (2016). Picking winners? investment consultants' recommendations of fund managers. *The Journal of Finance 71*(5), 2333–2370.

Jones, H., J. V. Martinez, and A. Montag (2023). Separate account vs mutual fund investors: Manager selection and performance.

Keswani, A. and D. Stolin (2008). Which money is smart? mutual fund buys and sells of individual and institutional investors. *The Journal of Finance 63*(1), 85–118.

Peterson, J. D., M. J. Iachini, and W. Lam (2011). Identifying characteristics to predict separately managed account performance. *Financial Analysts Journal 67*(4), 30–40.

Pischke, S. (2007). Lecture notes on measurement error. *London School of Economics, London*.

Pool, V. K., C. Sialm, and I. Stefanescu (2016). It pays to set the menu: Mutual fund investment options in 401(k) plans. *The Journal of Finance 71*(4), 1779–1812.

Pool, V. K., C. Sialm, and I. Stefanescu (2022). Mutual fund revenue sharing in 401 (k) plans. Technical report, National Bureau of Economic Research.

Reuter, J. (2024). Plan design and participant behavior in defined contribution retirement plans: past, present, and future. Technical report, National Bureau of Economic Research.

Rohleder, M., H. Tentesch, R. Weh, and M. Wilkens (2023). Fraternal twins—should investors be careful? *Review of Financial Economics 41*(1), 23–42.

Schwarz, C. G. and M. E. Potter (2016, 09). Revisiting Mutual Fund Portfolio Disclosure. *The Review of Financial Studies 29*(12), 3519–3544.

Shnitser, N. (2023). Overtaking mutual funds: The hidden rise and risk of collective investment trusts.

Tian, J. and J. Shi (2024). Why mutual funds decline in 401 (k) s.

Wiedenbeck, P. J., R. K. Hinkle, and A. D. Martin (2013). Invisible pension investments. *Virginia Tax Review 32*(4), 591–626.

Yang, H. (2023). What determines 401 (k) plan fees? a dynamic model of transaction costs and markups.

Zheng, L. (1999). Is money smart? a study of mutual fund investors' fund selection ability. *The Journal of Finance 54*(3), 901–933.

Figures

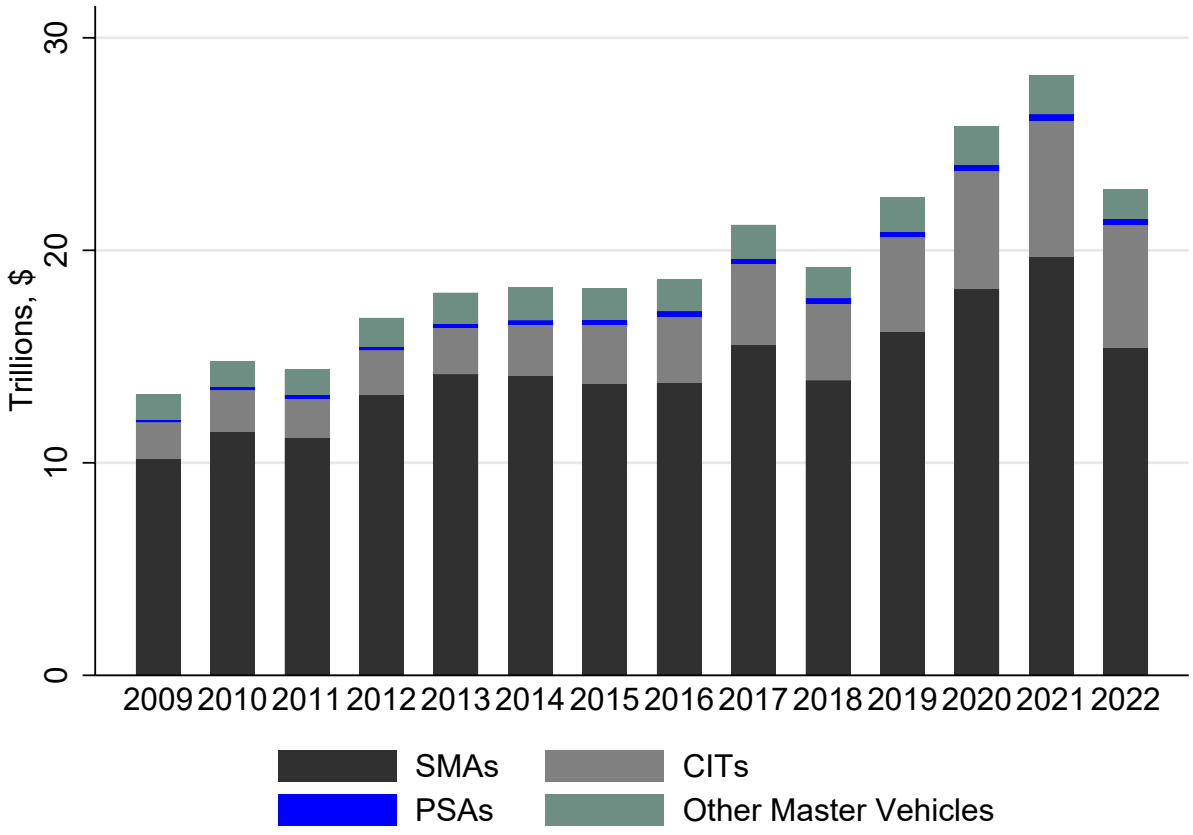


Figure 1: Growth of Assets in Institutional-Focused Investment Vehicles

This figure illustrates the growth of total net assets across four institutional-focused investment vehicle categories from 2009 to 2022: separately managed accounts (SMAs), common and collective investment trusts (CITs), pooled separate accounts (PSAs), and other master vehicles. Information regarding the total net assets of SMAs is sourced from the Morningstar Direct. Total net assets for all remaining investment vehicle categories are derived from Form 5500 filings submitted by employee benefit plans and Direct Filing Entities.

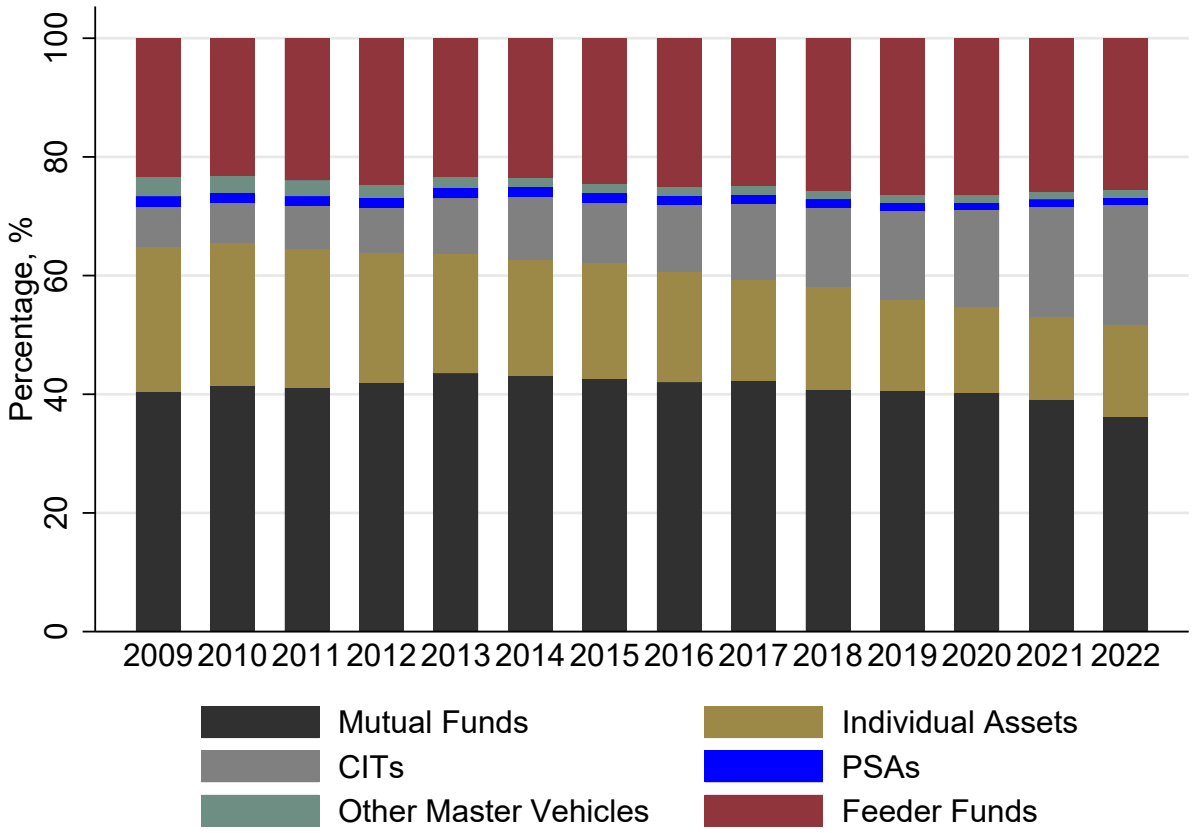


Figure 2: Asset Allocation across Investment Vehicles in DC Retirement Plans

This figure illustrates the changing distribution of assets in defined contribution (DC) retirement plans allocated across individual assets and five investment vehicle categories from 2009 to 2022: mutual funds, common and collective investment trusts (CITs), pooled separate accounts (PSAs), other master vehicles, and feeder funds. The data are sourced from Schedule H Form 5500 filings submitted by large DC retirement plans. This figure does not include separately managed accounts (SMAs), which do not appear in Form 5500 filings because their assets are typically reported as direct plan assets rather than being classified as an investment vehicle.

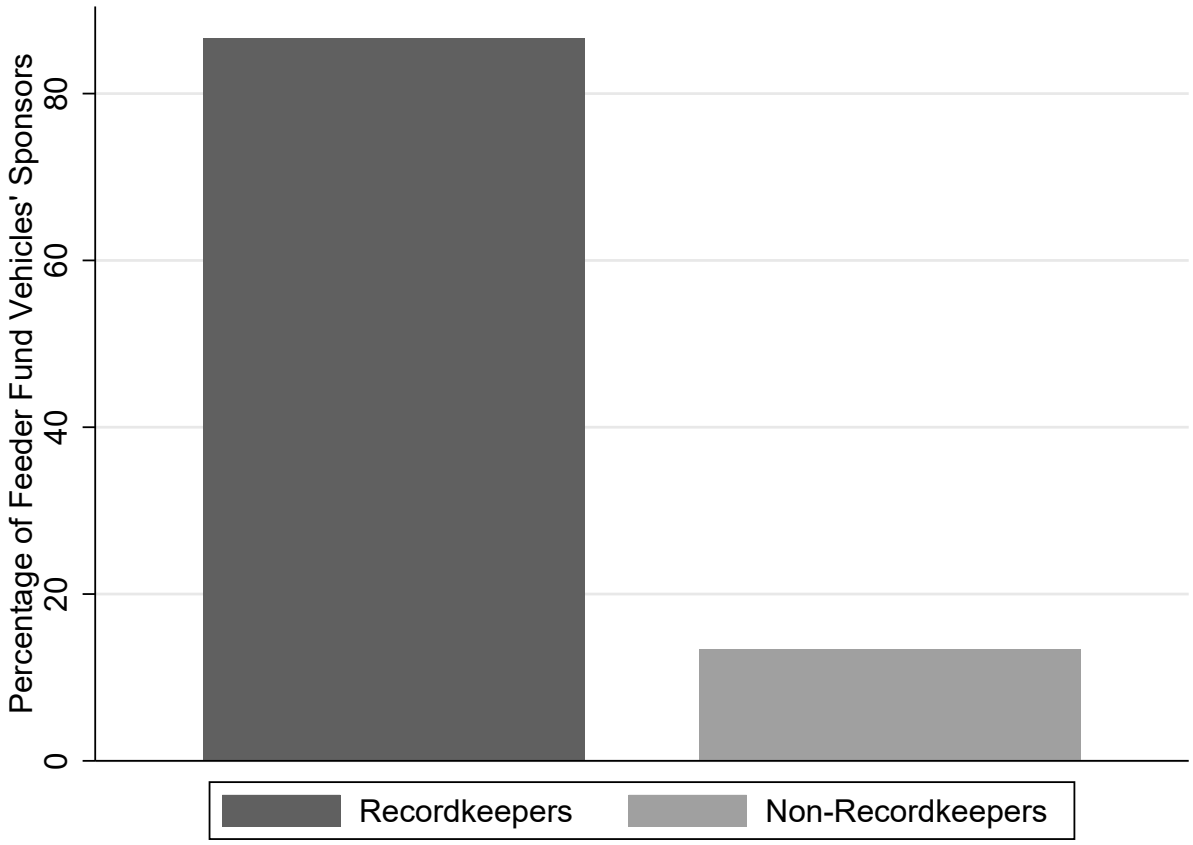


Figure 3: Feeder Fund Vehicles' Sponsors in DC Retirement Plans: Recordkeepers vs Non-Recordkeepers

This figure illustrates the distribution of feeder fund vehicle sponsors, categorized as either recordkeepers or non-recordkeepers. The sample includes plans filing Form 5500 Schedule H and D with menu options available in the Brightscope Beacon dataset. We exclude plans with institutional-focused investment vehicles in Schedule D that either lack their own Form 5500 filing or represent multiple investment strategies. We also keep only DC retirement plans that offer both at least one mutual fund option and at least one institutional-focused investment vehicle option during the sample period. We determine whether a feeder fund vehicle sponsor is a recordkeeper by conducting textual analysis of both the sponsor and recordkeeper names.

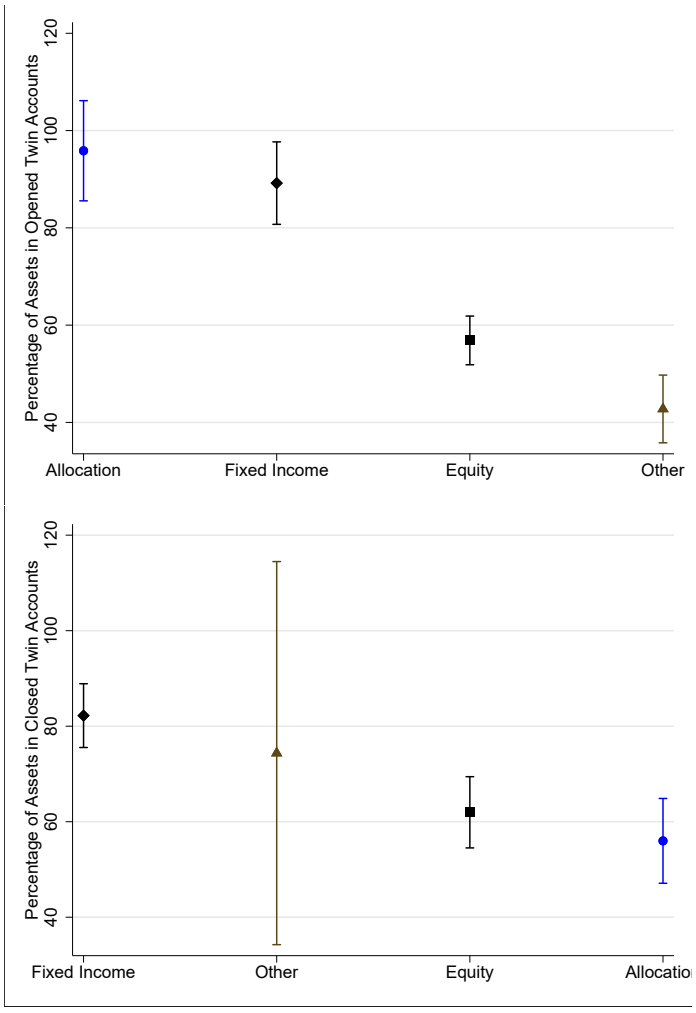


Figure 4: Assets in Twin Vehicle Opened and Closed Accounts Related to Asset Reclassification

This figure illustrates the percentage of assets in opened (Panel A) and closed (Panel B) twin vehicle accounts across four investment strategy classes (equity, fixed income, allocation, and other) related to asset reclassification. The percentages are calculated as $100 - 100\beta_{1,v}$ for opened accounts and $100 - 100\beta_{2,v}$ for closed accounts, where $\beta_{1,v}$ and $\beta_{2,v}$ represent coefficient estimates from the OLS regression model (10). These coefficients quantify the proportion of assets in opened and closed accounts that contribute to investment product flows for each strategy class v. The remaining portion of assets in opened and closed accounts that does not contribute to investment product flows is therefore associated with asset reclassification. The vertical bars represent 95% confidence intervals based on standard errors clustered at the Morningstar category level.

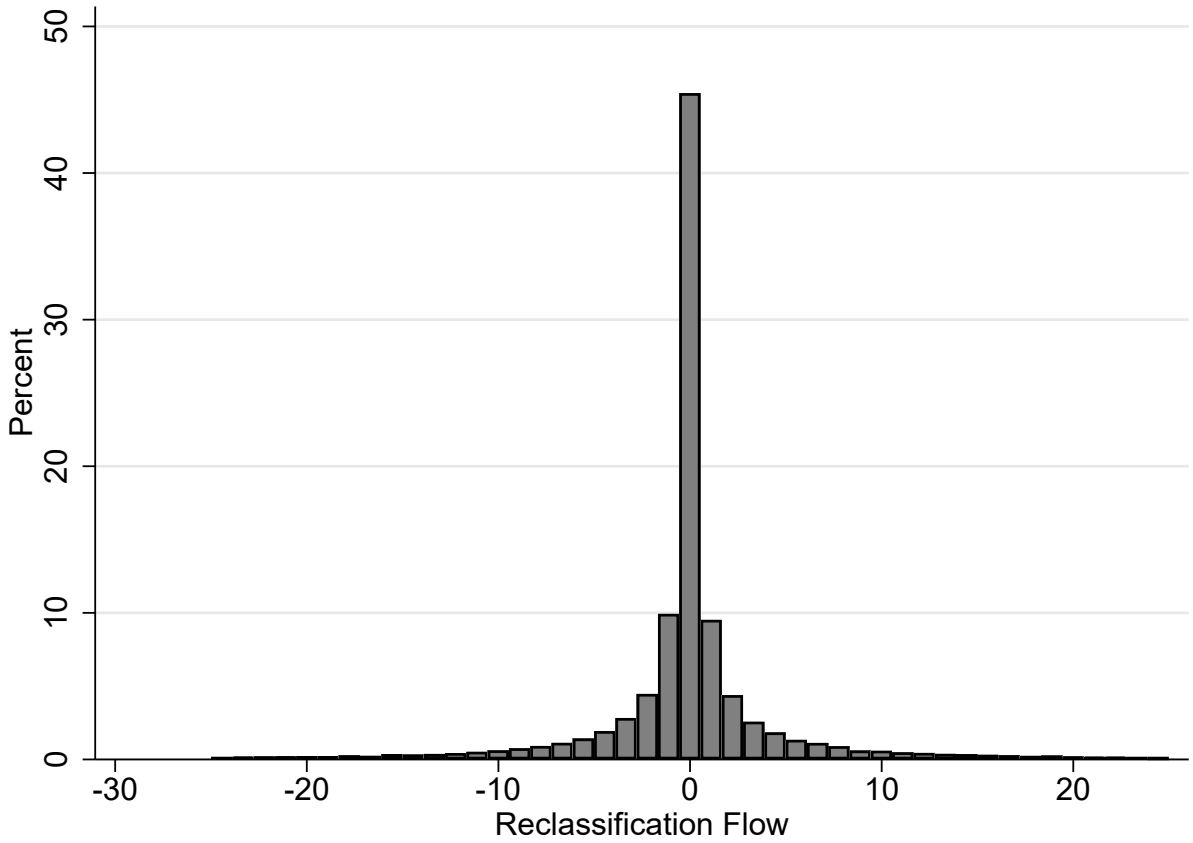


Figure 5: Distribution of Reclassification Flows

This figure plots the distribution of reclassification flows calculated as $F_{Reclassification,i,m} = \frac{Reclassified\ Assets\ Out_{i,m} - Reclassified\ Assets\ In_{i,m}}{(1+r_{i,m})TNA_{i,m-1}}$, where $TNA_{i,m}$ represents the total net assets of fund i in month m, while $r_{i,m}$ denotes the fund's net return for the same period. *Reclassified Assets Out*$_{i,m}$ quantifies the estimated assets transferred from a mutual fund to twin vehicles, derived from equations (11) and (13). Conversely, *Reclassified Assets In*$_{i,m}$ measures the estimated assets transferred from twin vehicles to a mutual fund, calculated using equations (12) and (14). The sample is limited to investment products with one or more opened or closed accounts in twin investment vehicles during a quarterly period.

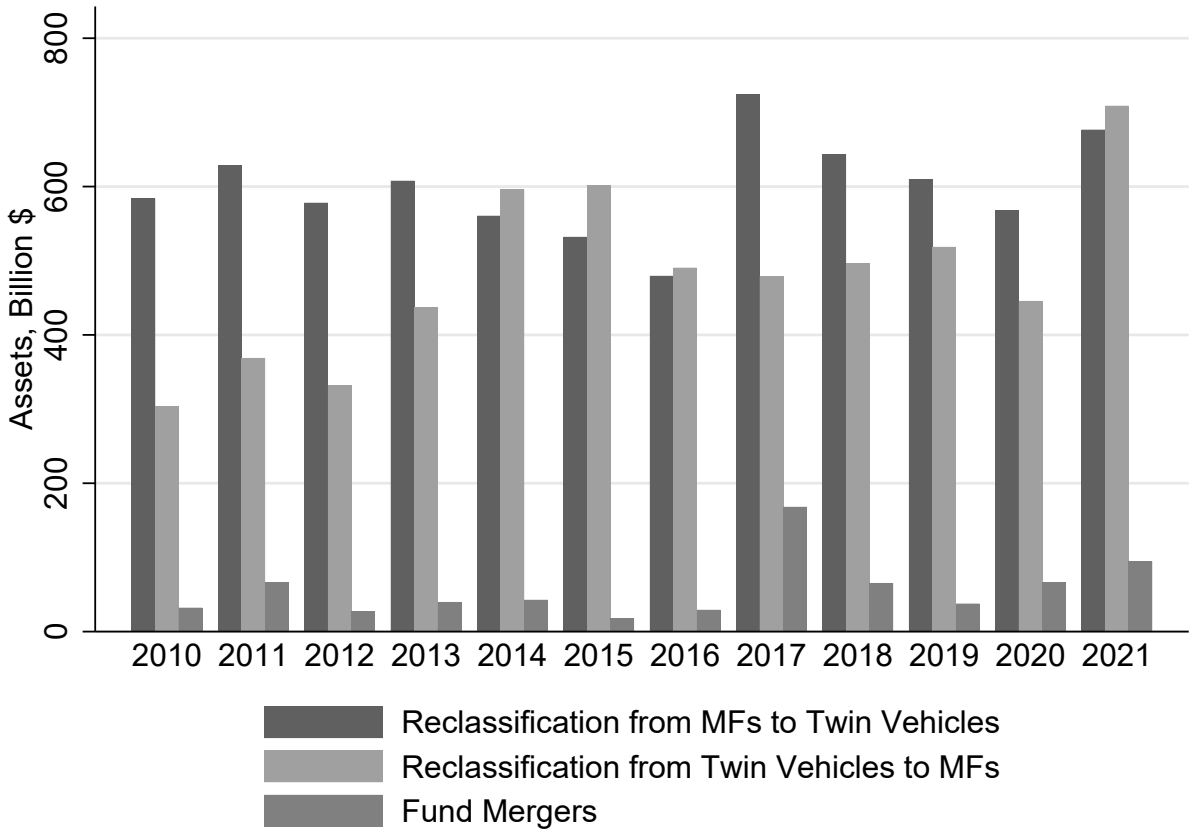


Figure 6: Annual Aggregate Asset Reclassification and Mutual Fund Mergers

This figure presents the annual aggregate value of asset reclassification between mutual funds and their twin investment vehicles from 2010 to 2021, compared with the annual total value of mutual fund mergers. Our methodology for quantifying the annual aggregate value of asset reclassification follows three steps: (1) We estimate the annual value of asset reclassification at the investment product level using a subsample with available data on opened and closed accounts in twin investment vehicles; (2) We calculate the annual aggregate value of asset reclassification within this subsample; and (3) We adjust the annual aggregate value of asset reclassification from the subsample by multiplying it by the ratio of total assets across all twin investment vehicles to total assets within the subsample for the corresponding year. The data on fund mergers is sourced from the Morningstar Direct database.

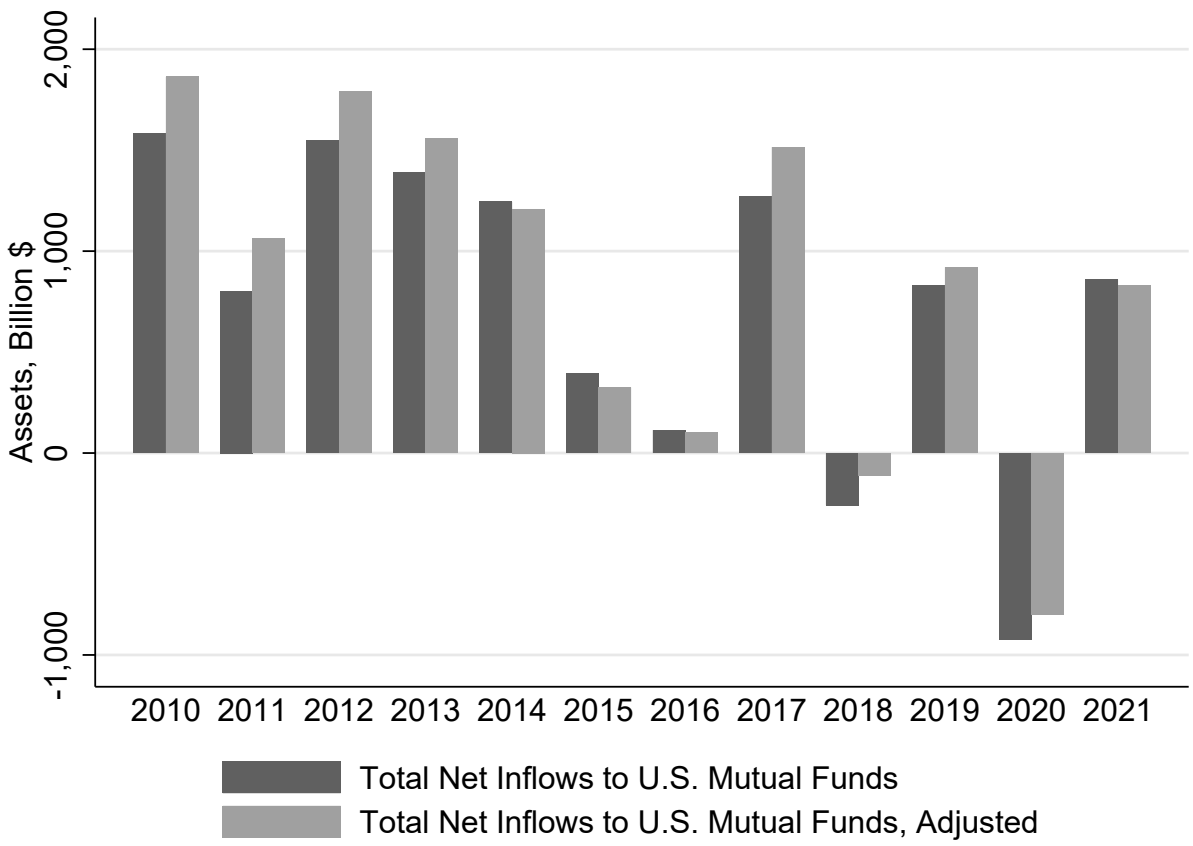


Figure 7: Total Net Inflows to U.S. Mutual Funds: Adjusted vs. Unadjusted for Asset Reclassification

This figure compares total net inflows to U.S. mutual funds from 2010 to 2021 with and without adjusting for asset reclassification. Total net inflows to U.S. mutual funds represent the annual sum of quarterly values from the Federal Reserve's "Total Financial Assets, Transactions" time series [BOGZ1FA654090000Q], sourced from the Financial Accounts of the United States, Board of Governors of the Federal Reserve System (US), and retrieved via the Federal Reserve Bank of St. Louis FRED system. The total net inflows to U.S. mutual funds are adjusted for asset reclassification by adding annual aggregate asset reclassification from mutual funds to their twin investment vehicles and subtracting annual aggregate asset reclassification from twin vehicles to mutual funds.

Tables

Table 1: Summary Statistics on Mutual Funds, Common/Collective Investment Trusts, and Separately Managed Accounts

This table provides summary statistics for the data on mutual funds, common/collective investment trusts (CITs), and separately managed accounts (SMAs) from the Morningstar Direct. The sample includes 16,576 mutual funds, 5,072 CITs, and 19,887 SMAs, covering the period from January 2000 to December 2022. Mutual fund variables are reported on a monthly basis . In the case of CITs and SMAs, gross returns, net returns, and fund TNAs are also on a monthly basis, whereas strategy information is reported quarterly. Continuous variables are winsorized at the 1st and 99th percentiles.

	Mean	Median	SD	Min	Max	# Obs.
Panel A - Mutual Fund Data						
Gross Return, %	0.55	0.63	4.06	-13	12	1,881,766
Net Return, %	0.46	0.55	4.08	-13	12	1,904,145
Fund TNA, Million	1,190.82	196.59	3,242.13	1	24,441	1,961,550
Sales, Million	30.96	4.01	85.43	0	616	1,505,365
Redemptions, Million	28.95	4.40	77.72	0	562	1,505,365
Equity Strategy	0.54	1.00	0.50	0	1	1,962,484
Allocation Strategy	0.15	0.00	0.36	0	1	1,962,484
Fixed Income Strategy	0.27	0.00	0.44	0	1	1,962,484
Other Strategy	0.04	0.00	0.19	0	1	1,962,484
Age, Years	12.51	9.83	11.17	0	98	1,960,181
Panel B - Institutional-Focused Vehicle Data						
Common/Collective Investment Trusts						
Gross Return, %	0.57	0.55	3.88	-11	11	243,040
Net Return, %	0.54	0.57	3.80	-11	11	481,203
Fund TNA, Million	774.47	90.44	2,383.77	0	18,783	333,921
Equity Strategy	0.44	0.00	0.50	0	1	494,251
Allocation Strategy	0.34	0.00	0.48	0	1	494,251
Fixed Income Strategy	0.17	0.00	0.37	0	1	494,251
Other Strategy	0.05	0.00	0.21	0	1	494,251
Age, Years	7.90	5.50	7.71	0	62	493,617
Separately Managed Accounts						
Gross Return, %	0.63	0.63	3.87	-11	11	2,578,096
Net Return, %	0.57	0.58	3.87	-12	11	2,519,299
Fund TNA, Million	1,259.04	122.46	3,496.94	0	24,927	1,519,885
Equity Strategy	0.56	1.00	0.50	0	1	2,600,474
Allocation Strategy	0.20	0.00	0.40	0	1	2,600,474
Fixed Income Strategy	0.23	0.00	0.42	0	1	2,600,474
Other Strategy	0.02	0.00	0.14	0	1	2,600,474
Age, Years	10.20	8.33	8.13	0	89	2,595,329
Investment Product-Level Data for CITs and SMAs						
Total Inst. Vehicle Accounts	175.19	11.00	1,211.81	0	117,451	597,747
Inst. Vehicle Taxed Accounts	102.64	3.00	845.40	0	77,755	326,177
Inst. Vehicle Tax-Exempt Accounts	59.34	5.00	457.05	0	38,014	319,973
Inst. Vehicle Accounts Lost	5.85	0.00	224.46	0	103,751	342,580
Inst. Vehicle Accounts Gained	6.03	0.00	90.69	0	35,044	353,736
Assets in Inst. Vehicle Accounts, Million	1,925.64	186.00	5,477.06	0	39,724	689,954
Assets in Inst. Vehicle Taxed Accounts, Million	1,473.88	103.58	4,444.60	0	32,326	354,488
Assets in Inst. Vehicle Tax-Exempt Accounts, Million	1,396.18	157.00	3,632.26	0	24,866	352,279
Assets in Inst. Vehicle Accounts Lost, Million	19.41	0.00	77.02	0	569	320,691
Assets in Inst. Vehicle Accounts Gained, Million	23.92	0.00	93.00	0	684	325,386

Table 2: Summary Statistics on DC Retirement Plans

This table presents summary statistics for annual data on investment menu options in defined contribution (DC) retirement plans, compiled from Form 5500 filings and BrightScope Beacon. Panel A reports summary statistics for the full sample, comprising 5,904,410 menu options across 116,852 401(k) and 403(b) plans from 2009 to 2022. Panel B focuses on a subsample of menu options in DC retirement plans that meet three specific criteria: (1) plans must offer at least one mutual fund option and one institutional-focused investment vehicle during the 2009-2022 period; (2) all institutional-focused investment vehicles in these plans' menus must file their own Form 5500 reports; and (3) each institutional-focused investment vehicle offered in these plans' menus represents a single underlying investment strategy, which we identified through textual analysis of the vehicle names. Continuous variables are winsorized at the 1st and 99th percentiles.

	Mean	**Median**	**SD**	**Min**	**Max**	**# Obs.**
Panel A - Full Sample						
Option Balance (in M)	1.74	0.18	5.86	0	45	20,498,783
Expense Ratio	0.63	0.64	0.38	0	2	18,748,664
Plan Balance (in M)	74.30	12.39	237.46	0	1,819	20,498,578
Number of Plan Menu Options	37.15	30.00	27.24	11	199	20,498,783
Panel B - Subsample						
Mutual Fund Option	0.86	1.00	0.34	0	1	1,223,076
Common/Collective Investment Trust Option	0.06	0.00	0.23	0	1	1,223,076
Pooled Separate Account Option	0.08	0.00	0.27	0	1	1,223,076
Another Master Option	0.00	0.00	0.00	0	1	1,223,076
Feeder Fund Vehicle with Inst.Vehicles	0.01	0.00	0.10	0	1	1,223,076
Feeder Fund Vehicle without Inst.Vehicles	0.02	0.00	0.15	0	1	1,223,076
Option Balance (in M)	1.46	0.22	3.83	0	27	1,223,076
Expense Ratio	0.62	0.62	0.37	0	2	1,170,215
Plan Balance (in M)	123.58	25.45	294.93	0	1,965	1,223,076
Number of Plan Menu Options	54.23	34.00	52.28	11	282	1,223,076

Table 3: Characteristics of Mutual Fund Options Undergoing Asset Reclassification in DC Plan Menus

This table presents descriptive statistics for mutual fund options in defined contribution (DC) plan menus that are being reclassified to twin investment vehicles in our sample. In the first case in Column 1, a mutual fund investment option is directly replaced by its twin investment vehicle. In Column 2, a mutual fund option is replaced with a feeder fund vehicle that invests in the twin vehicle of the original fund. Option Size is the option's dollar value of assets (in millions). Relative Option Size is the ratio of assets invested in an option to plan assets. Mutual fund-level variables include fund age, fund size (in billions) as measured by total assets under management, the volatility of monthly fund returns, turnover, the expense ratio, indicator variables for an investment strategy class (Equity, Fixed Income, Allocation, or Other), and mean performance percentiles. Performance percentiles are calculated over the previous three years based on mutual funds of the same Morningstar category in the Morningstar fund universe. Significance levels for tests of the difference in means are denoted by *, **, and ***, which correspond to the 10%, 5%, and 1% levels, respectively.

	(1)	(2)	(3)	(4)	(5)
Variable	Reclass. Opt. Case 1	Reclass. Opt. Case 2	Non-Reclass. Opt.	Diff. (1)-(3)	Diff. (2)-(3)
Option Size (in M)	3.39	2.02	1.62	1.77***	0.40
	(5.66)	(4.58)	(4.12)	(0.15)	(0.45)
Relative Option Size (in %)	4.38	6.37	2.30	2.08***	4.07***
	(4.47)	(7.14)	(4.05)	(0.14)	(0.44)
Expense Ratio (in %)	0.64	0.48	0.61	0.03**	-0.13***
	(0.31)	(0.32)	(0.37)	(0.01)	(0.04)
Turnover (in %)	37.93	31.42	49.92	-11.99***	-18.50*
	(68.83)	(61.86)	(84.18)	(3.42)	(9.92)
Age (in years)	14.95	22.44	16.98	-2.03***	5.46***
	(5.30)	(14.39)	(10.69)	(0.43)	(1.26)
Fund Size (in B)	8.19	23.90	34.10	-25.92***	-10.20
	(11.36)	(60.93)	(95.10)	(4.06)	(11.98)
Return Std.Dev. (in %)	3.26	3.20	3.70	-0.44***	-0.50**
	(1.51)	(1.26)	(1.82)	(0.07)	(0.21)
Prior 3-Yr. Perf. (Percentile)	60.12	66.28	56.99	3.12***	9.28***
	(27.14)	(21.69)	(25.19)	(1.02)	(2.97)
Equity Strategy (in %)	27.30	45.83	52.19	-24.89***	-6.36
	(44.59)	(50.18)	(49.95)	(2.03)	(5.89)
Fixed Income Strategy (in %)	4.44	5.56	12.61	-8.17***	-7.06*
	(20.62)	(23.07)	(33.20)	(1.35)	(3.91)
Allocation Strategy (in %)	68.26	48.61	34.97	33.29***	13.64**
	(46.59)	(50.33)	(47.69)	(1.94)	(5.62)
Other Strategy (in %)	0.00	0.00	0.23	-0.23	-0.23
	(0.00)	(0.00)	(4.79)	(0.19)	(0.56)
Observations	807	83	673,876	674,683	673,959

Table 4: Effect of Asset Reclassification in DC Retirement Plans on the Expense Ratio

This table reports coefficient estimates from the OLS regression (8) examining the relation between asset reclassification in DC retirement plans and expense ratios. The unit of observation in Columns 1-3 is the investment option-year, while the sample in Columns 4-6 is limited to the first and last observations for each investment option. The dependent variable across all specifications is the expense ratio. A specification in Columns 1 and 4 includes a single indicator variable as the primary explanatory variable, which equals 1 if the investment option is an institutional-focused investment vehicle and 0 otherwise. A specification in Columns 2 and 5 incorporates separate indicator variables for master institutional-focused investment vehicles and feeder fund institutional-focused investment vehicles. In Columns 3 and 6, the feeder fund institutional-focused vehicle indicator is replaced with two more granular indicators that distinguish between feeder fund vehicles that allocate some assets to master institutional-focused investments and those with zero allocation to master institutional-focused investments. All specifications incorporate investment option fixed effects, while specifications in Columns 1-3 additionally include year fixed effects. Standard errors are clustered at the investment option level and are reported in parentheses. Significance levels are denoted by *, **, and ***, which correspond to the 10%, 5%, and 1% levels, respectively.

	Expense Ratio					
	(1)	(2)	(3)	(4)	(5)	(6)
$\mathbb{1}_{\text{Inst.Vehicle}}$	-0.07***			-0.09***		
	(0.00)			(0.01)		
$\mathbb{1}_{\text{Master Inst.Vehicle}}$		-0.09***	-0.09***		-0.13***	-0.13***
		(0.01)	(0.01)		(0.01)	(0.01)
$\mathbb{1}_{\text{Feeder Fund Inst.Vehicle}}$		-0.03***			-0.03***	
		(0.01)			(0.01)	
$\mathbb{1}_{\text{Feeder Fund Inst.Vehicle with Inst.Vehicles}}$			-0.01			0.00
			(0.01)			(0.01)
$\mathbb{1}_{\text{Feeder Fund Inst.Vehicle without Inst.Vehicles}}$			-0.05***			-0.05***
			(0.01)			(0.01)
Investment Option FE	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	-	-	-
Observations	1,090,367	1,090,367	1,090,367	415,218	415,218	415,218
R^2	0.93	0.93	0.93	0.95	0.95	0.95

Table 5: Asset Reclassification in DC Retirement Plans and Flow Measures

This table reports coefficient estimates from the OLS regression (9) examining the relation between the share of reclassified assets observable through our data on DC retirement plans and flow measures. The units of observation are mutual fund-year in Columns 1-4 and investment product-year in Columns 5-6. The explanatory variable in all specifications is the ratio of annual total assets reclassified from mutual funds to twin investment vehicles (observable through our data on DC retirement plans) relative to mutual fund assets at the previous year-end. The sample includes only observations where DC retirement plan data indicates that more than 1% of mutual fund assets were reclassified. The dependent variables are the annual minimum of monthly fund flows (equation (4)) in Columns 1 and 2, the annual maximum of monthly redemption flows (equation (2)) in Columns 3 and 4, the annual maximum of quarterly investment product flows due to opened accounts in twin vehicles (equation (6)) in Columns 5 and 6.Control variables include fund age and log of fund assets (Columns 1-4) or investment product age and log of investment product assets (Columns 5-6). Fixed effects used in each specification are detailed in the table. Standard errors are clustered at the fund level and are reported in parentheses. Significance levels are denoted by *, **, and ***, which correspond to the 10%, 5%, and 1% levels, respectively.

	Min Monthly Flow		**Max Monthly Redemption Flow**		**Max Quarterly New Accounts Flow**	
	(1)	(2)	(3)	(4)	(5)	(6)
Share of Reclassified Assets in DC Plans	-0.03*	-0.03**	0.07**	0.08***	1.34***	1.29***
	(0.01)	(0.01)	(0.03)	(0.03)	(0.43)	(0.44)
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	No	Yes	No	Yes	No
Morningstar Category FE	Yes	No	Yes	No	Yes	No
Morningstar Category × Year FE	No	Yes	No	Yes	No	Yes
Observations	8,216	8,154	6,340	6,273	2,736	2,678
R^2	0.16	0.20	0.16	0.19	0.12	0.16

Table 6: Investment Product Flows Explained by Assets in Opened and Closed Accounts

This table presents coefficient estimates from the OLS regression (10), which quantifies the proportion of investment product-level flows attributable to assets in newly opened and recently closed accounts. The sample period spans from January 2000 through December 2021. The unit of observation is at the investment product-quarter level. The dependent variable in each specification is investment product flows calculated according to equation (5). The explanatory variables in Columns 1 and 3 are investment product flows attributable to opened and closed accounts, calculated according to equations (6) and (7), respectively. The explanatory variables in Columns 2 and 4 incorporate the interaction between investment product-level flows attributable to opened and closed accounts and indicator variables for four strategy classes: equity, fixed income, allocation, and other. All regression specifications include the following control variables: the log of lagged investment product size and the log of lagged investment product age in years. Fixed effects used in each specification are detailed in the table. Standard errors are clustered at the Morningstar category level and are reported in parentheses. Significance levels are denoted by *, **, and ***, which correspond to the 10%, 5%, and 1% levels, respectively.

	Investment Product Flows			
	(1)	(2)	(3)	(4)
Flow Due to Assets in Opened Accounts	0.31***		0.37***	
	(0.04)		(0.04)	
Flow Due to Assets in Closed Accounts	-0.33***		-0.39***	
	(0.03)		(0.03)	
Flow Due to Assets in Opened Accounts * Equity		0.43***		0.50***
		(0.03)		(0.02)
Flow Due to Assets in Closed Accounts * Equity		-0.38***		-0.45***
		(0.04)		(0.03)
Flow Due to Assets in Opened Accounts * Fixed Income		0.11**		0.14***
		(0.04)		(0.04)
Flow Due to Assets in Closed Accounts * Fixed Income		-0.18***		-0.19***
		(0.03)		(0.04)
Flow Due to Assets in Opened Accounts * Allocation		0.04		0.11**
		(0.05)		(0.04)
Flow Due to Assets in Closed Accounts * Allocation		-0.44***		-0.54***
		(0.04)		(0.06)
Flow Due to Assets in Opened Accounts * Other		0.57***		0.61***
		(0.03)		(0.05)
Flow Due to Assets in Closed Accounts * Other		-0.26		-0.25
		(0.20)		(0.21)
Controls	Yes	Yes	Yes	Yes
Investment Product FE	Yes	Yes	-	-
Morningstar Category FE	-	-	Yes	Yes
Date FE	Yes	Yes	Yes	Yes
Observations	53,796	53,796	53,879	53,879
R^2	0.22	0.23	0.12	0.12

Table 7: Relation Between Reclassification Flows and Standard Mutual Fund Flows

This table presents coefficient estimates from OLS regressions examining the relation between reclassification flows and standard mutual fund flows. The sample period spans from January 2000 through December 2021. The unit of observation is at the fund-month level. The dependent variable in each specification is monthly standard mutual fund flows, while the explanatory variable is monthly reclassification flow calculated according to equation (15). All regression specifications include the following control variables: the log of lagged fund size and the log of lagged fund age in years. Fixed effects used in each specification are detailed in the table. Standard errors are clustered at the fund level and are reported in parentheses. Significance levels are denoted by *, **, and ***, which correspond to the 10%, 5%, and 1% levels, respectively.

	Standard Flow$_t$	
	(1)	(2)
Reclassification Flow$_t$	-0.015***	-0.032***
	(0.004)	(0.004)
Controls	Yes	Yes
Fund FE	Yes	-
Morningstar Category FE	-	Yes
Date FE	Yes	Yes
Observations	130,025	130,025
R^2	0.18	0.10

Table 8: Biased Estimates and Asset Reclassification: Smart Money Tests

This table reports coefficient estimates from the OLS regression (17) examining the relation between performance and past flows for active equity mutual funds. The sample comprises active equity mutual funds with twin investment vehicles, for which data on opened and closed twin vehicle accounts is available. The sample period spans from January 2010 through December 2020. The unit of observation is at the fund-month level. The dependent variables are monthly gross returns in Columns 1-2, monthly alpha estimated using the CAPM model over a 12-month forward period in Columns 3-4, and monthly alpha estimated using the Carhart four-factor model over a 12-month forward period in Columns 5-6. In Columns 1, 3, and 5, the explanatory variable is lagged standard fund flows. In Columns 2, 4, and 6, the explanatory variable is lagged fund flows adjusted for asset reclassification (calculated according to equation (15)). All regression specifications include the following control variables: the log of fund size and the log of fund age in years. Additionally, each specification incorporates both time and Morningstar category fixed effects. Standard errors are clustered at the fund level and are reported in parentheses. Significance levels are denoted by *, **, and ***, which correspond to the 10%, 5%, and 1% levels, respectively

	Gross Return$_t$		**Forward CAPM Alpha$_t$**		**Forward Carhart FF4 Alpha$_t$**	
	(1)	(2)	(3)	(4)	(5)	(6)
Standard Flow$_{t-1}$	0.0039**		-0.0007		-0.0003	
	(0.0016)		(0.0011)		(0.0009)	
Adjusted Flow$_{t-1}$		0.0012***		-0.0001		-0.0001
		(0.0004)		(0.0003)		(0.0003)
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Morningstar Category FE	Yes	Yes	Yes	Yes	Yes	Yes
Date FE	Yes	Yes	Yes	Yes	Yes	Yes
Observations	87,675	87,675	58,003	58,003	58,003	58,003
R^2	0.82	0.82	0.20	0.20	0.22	0.22

Table 9: Biased Estimates and Asset Reclassification: Flows to Past Performance Sensitivity

This table reports coefficient estimates from the OLS regression (18) examining the flow to past performance sensitivity for active equity mutual funds. The sample comprises active equity mutual funds with twin investment vehicles, for which data on opened and closed twin vehicle accounts is available. The sample period spans from January 2000 through December 2021. Columns 1-2 report results using standard monthly mutual fund flows as the dependent variable. Columns 3-4 employ an adjusted flow measure that accounts for asset reclassification, calculated according to equation (15). The explanatory variable is the one-month lagged gross return. All regression specifications include the following control variables: the log of lagged fund size and the log of lagged fund age in years. Fixed effects used in each specification are detailed in the table. Standard errors are clustered at the fund level and are reported in parentheses. Significance levels are denoted by *, **, and ***, which correspond to the 10%, 5%, and 1% levels, respectively.

	Flow$_t$		**Adjusted Flow**$_t$	
	(1)	(2)	(3)	(4)
Gross Return$_{t-1}$	0.155***	0.172***	0.176***	0.214***
	(0.009)	(0.009)	(0.018)	(0.019)
Controls	Yes	Yes	Yes	Yes
Fund FE	Yes	-	Yes	-
Morningstar Category FE	-	Yes	-	Yes
Date FE	Yes	Yes	Yes	Yes
Observations	129,906	129,906	129,906	129,906
R^2	0.19	0.11	0.15	0.05

Appendix

A Figures

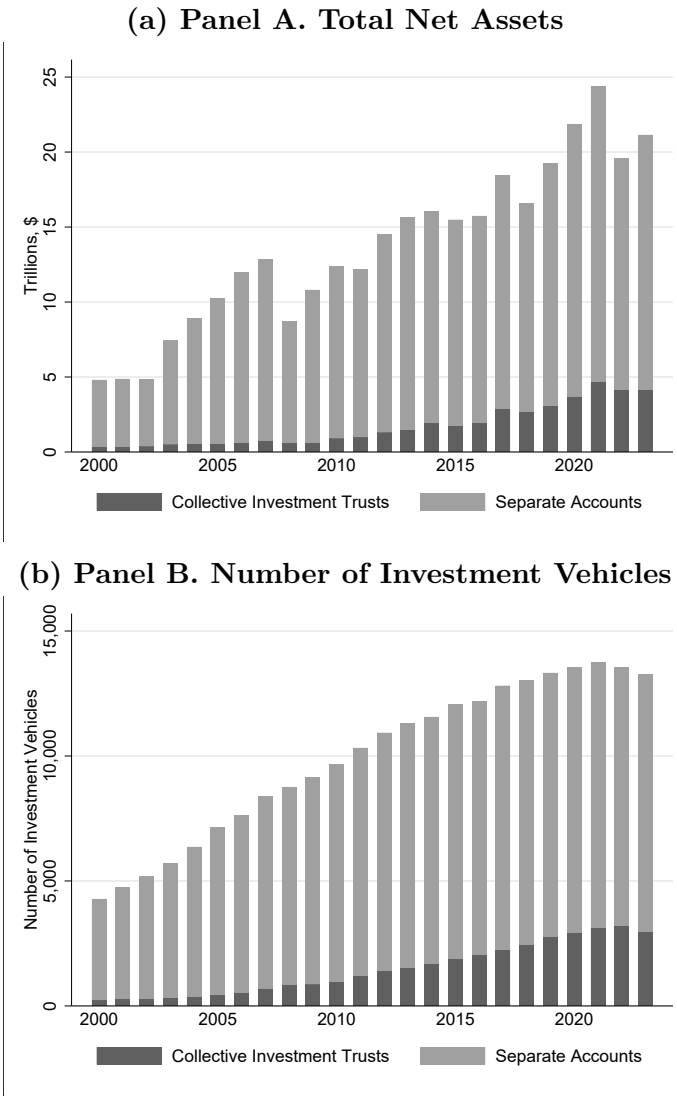


Figure A.1: Collective Investment Trusts and Separately Managed Accounts: Morningstar Coverage

This figure illustrates Morningstar's coverage of collective investment trusts and separately managed accounts from 2000 to 2023. Panel A presents the total net assets, while Panel B displays the total number of investment vehicles. The total number of investment vehicles is defined as the number of unique Fund IDs.

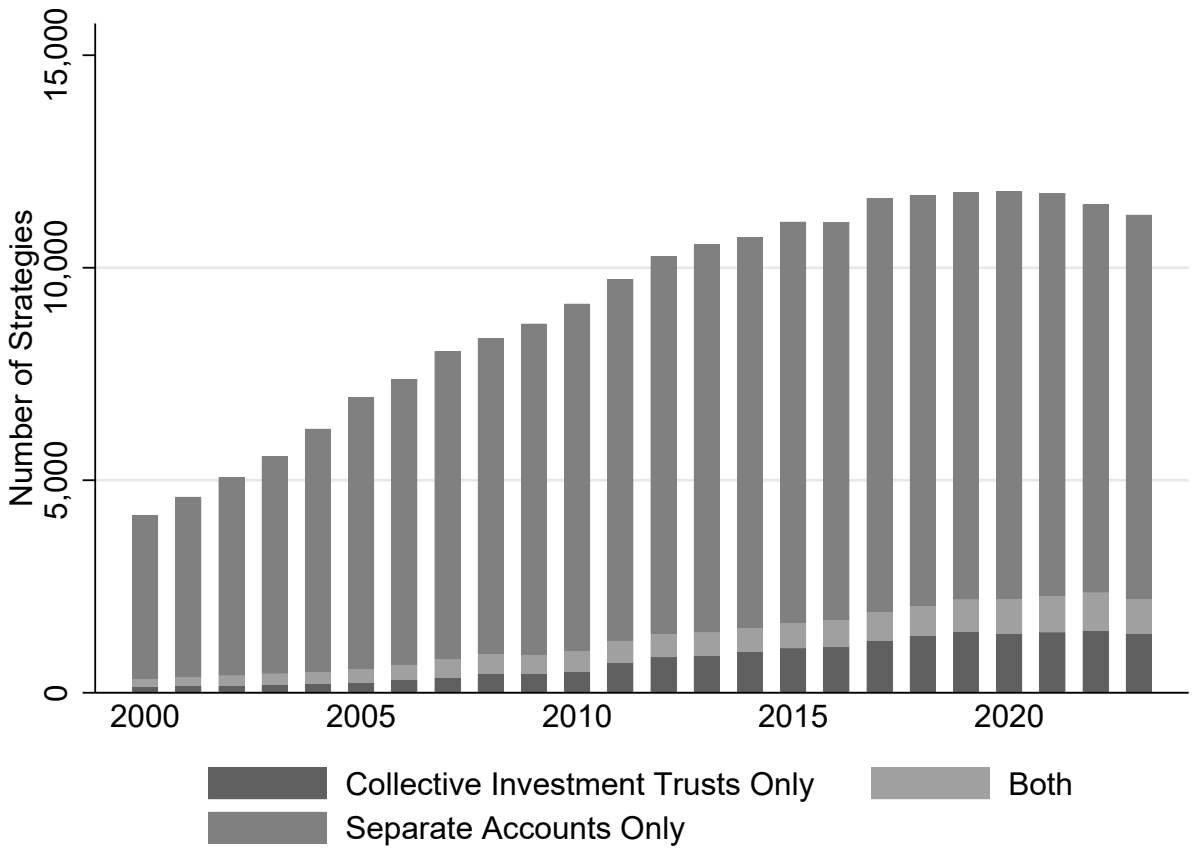


Figure A.2: Investment Products in Collective Investment Trusts and Separately Managed Accounts: Morningstar Coverage

This figure illustrates Morningstar's coverage of investment products in collective investment trusts and separately managed accounts from 2000 to 2023. The number of investment products is defined as the number of unique Strategy IDs.

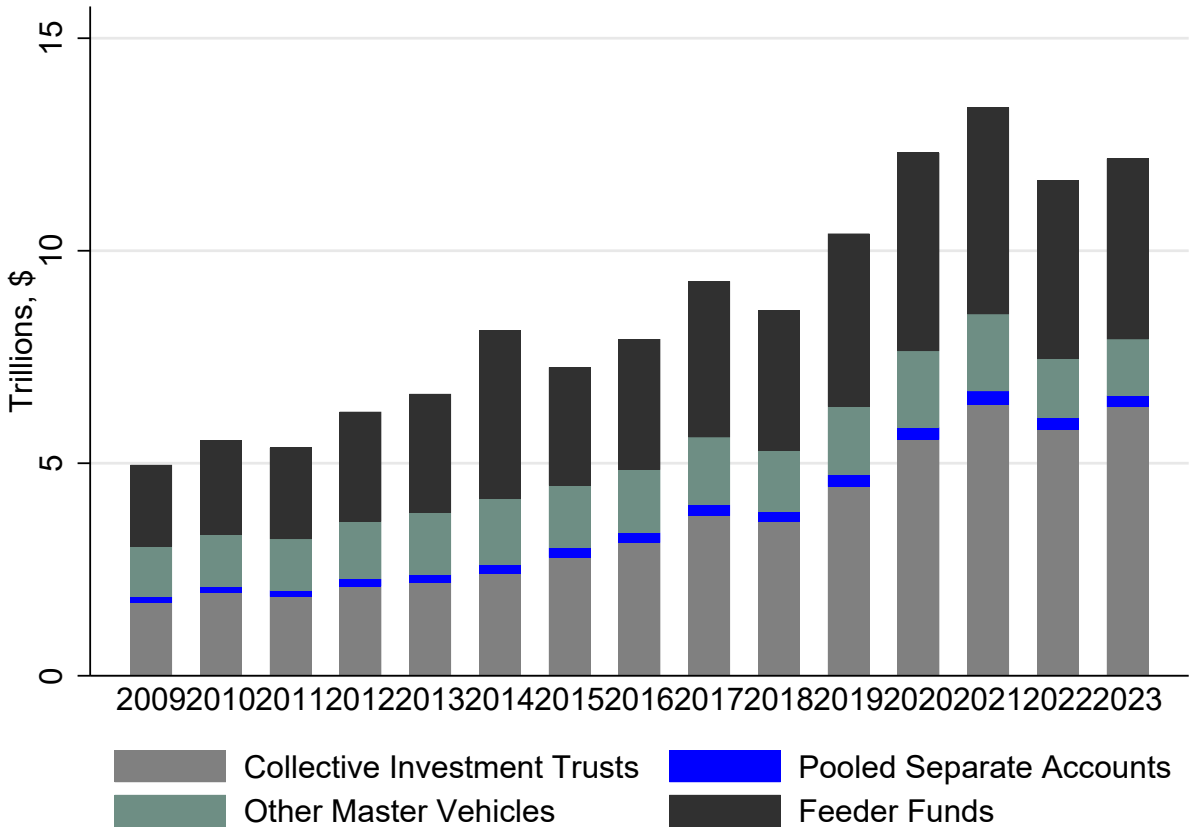


Figure A.3: Assets in Institutional-Focused Investment Vehicles Observed Through Form 5500 Fillings

This figure illustrates the growth of assets in employee benefit plans and Direct Filling Entities reporting Form 5500 filings across four investment vehicle categories from 2009 to 2022: common and collective investment trusts (CITs), pooled separate accounts (PSAs), other direct vehicles, and fiduciary vehicles.

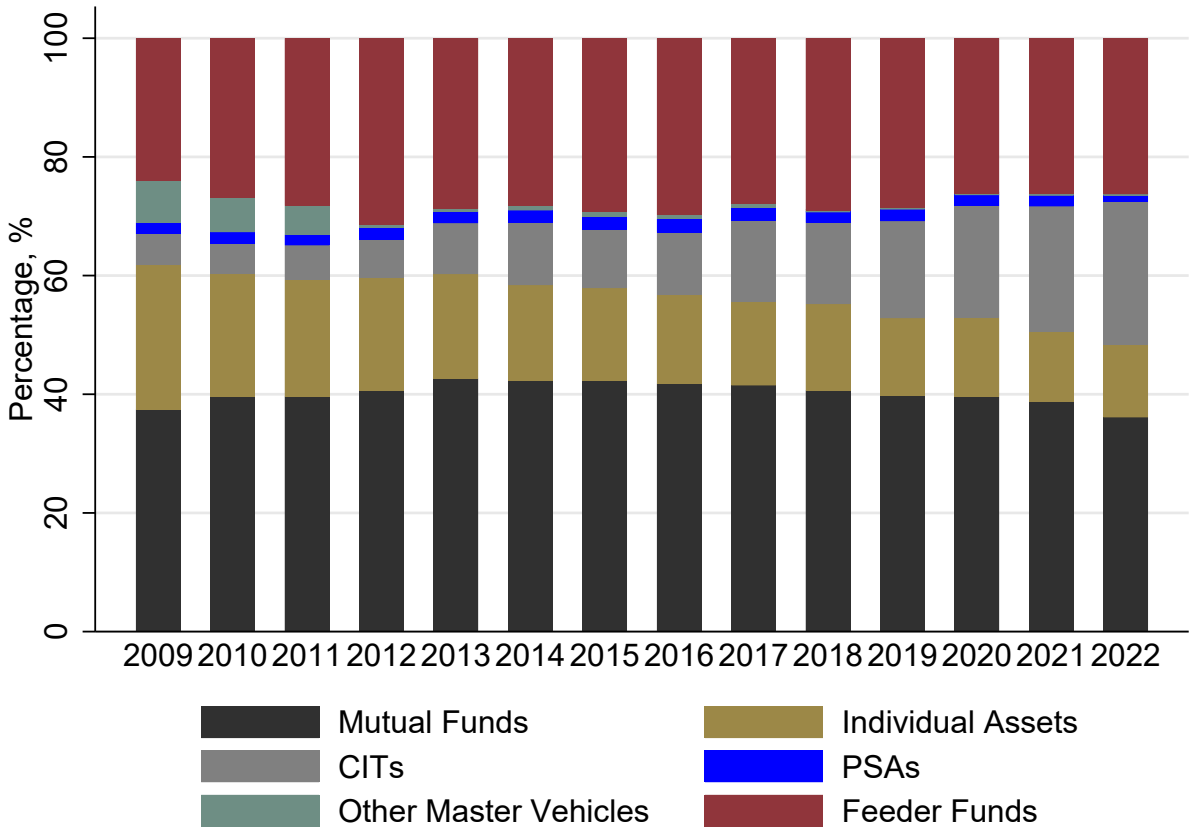


Figure A.4: Assets in Institutional-Focused Investment Vehicle within Large DC Retirement Plans: the Constant Sample of Plans

This figure illustrates the changing distribution of assets in DC retirement plans allocated across individual assets and five investment vehicle categories from 2009 to 2022: mutual funds, common and collective investment trusts (CITs), pooled separate accounts (PSAs), other master vehicles, and feeder funds. The data are sourced from Schedule H Form 5500 filings submitted by large DC retirement plans. The sample is limited to DC retirement plans with continuous annual filings throughout the 2009-2022 period. This figure does not include separately managed accounts (SMAs), which do not appear in Form 5500 filings because their assets are typically reported as direct plan assets rather than being classified as an investment vehicle.

B Tables

Table B.1: Summary Statistics on Mutual Funds and Their Twin Investment Vehicles

This table provides summary statistics for the data on mutual funds with twin investment vehicles from the Morningstar Direct. The sample includes 3,168 mutual funds, 600 CITs, and 2,915 SMAs, covering the period from January 2000 to December 2022. Mutual fund variables are reported on a monthly basis . In the case of CITs and SMAs, gross returns, net returns, and fund TNAs are also on a monthly basis, whereas strategy information is reported quarterly. Continuous variables are winsorized at the 1st and 99th percentiles.

	Mean	Median	SD	Min	Max	# Obs.
Mutual Funds with Twin Vehicles						
Gross Return, %	0.71	0.77	4.30	-13	12	477,103
Net Return, %	0.62	0.69	4.30	-13	12	478,667
Fund TNA, Million	1,738.61	368.83	3,935.29	1	24,441	482,287
Sales, Million	44.66	7.44	103.73	0	616	362,100
Redemptions, Million	42.69	7.94	96.29	0	562	362,100
Equity Strategy	0.72	1.00	0.45	0	1	482,711
Allocation Strategy	0.04	0.00	0.19	0	1	482,711
Fixed Income Strategy	0.22	0.00	0.42	0	1	482,711
Other Strategy	0.02	0.00	0.12	0	1	482,711
Age, Years	14.50	12.08	12.22	0	98	482,324
Twin Common/Collective Investment Trusts						
Gross Return, %	0.63	0.74	4.35	-11	11	33,329
Net Return, %	0.62	0.74	4.34	-11	11	52,133
Fund TNA, Million	1,249.52	192.75	3,384.50	0	18,783	44,905
Equity Strategy	0.76	1.00	0.43	0	1	53,417
Allocation Strategy	0.05	0.00	0.22	0	1	53,417
Fixed Income Strategy	0.19	0.00	0.39	0	1	53,417
Other Strategy	0.01	0.00	0.08	0	1	53,417
Age, Years	7.28	5.46	6.59	0	39	53,181
Twin Separately Managed Accounts						
Gross Return, %	0.73	0.78	4.25	-11	11	446,768
Net Return, %	0.67	0.73	4.26	-12	11	443,031
Fund TNA, Million	2,917.43	835.89	5,201.58	0	24,927	326,795
Equity Strategy	0.74	1.00	0.44	0	1	449,658
Allocation Strategy	0.03	0.00	0.18	0	1	449,658
Fixed Income Strategy	0.21	0.00	0.41	0	1	449,658
Other Strategy	0.02	0.00	0.12	0	1	449,658
Age, Years	13.69	12.33	9.09	0	89	447,764
Investment Product-Level Data for Twin CITs and SMAs						
Total Inst. Vehicle Accounts	148.69	11.00	1,315.48	0	71,614	116,133
Inst. Vehicle Taxed Accounts	74.26	4.00	740.03	0	34,218	92,953
Inst. Vehicle Tax-Exempt Accounts	49.47	5.00	512.87	0	38,014	90,310
Inst. Vehicle Accounts Lost	5.88	0.00	416.45	0	103,751	87,209
Inst. Vehicle Accounts Gained	4.81	0.00	141.45	0	35,044	89,225
Assets in Inst. Vehicle Accounts, Million	4,333.00	1,298.00	7,849.42	0	39,724	125,540
Assets in Inst. Vehicle Taxed Accounts, Million	2,842.74	639.30	5,814.12	0	32,326	102,326
Assets in Inst. Vehicle Tax-Exempt Accounts, Million	1,978.84	401.00	4,276.57	0	24,866	99,630
Assets in Inst. Vehicle Accounts Lost, Million	25.56	0.00	90.04	0	569	83,859
Assets in Inst. Vehicle Accounts Gained, Million	31.52	0.00	108.68	0	684	84,338

Table B.2: Characteristics of Institutional-Focused Vehicle Options Undergoing Asset Reclassification in DC Plan Menu

This table presents descriptive statistics for institutional-focused vehicle options in defined contribution (DC) plan menus that are being reclassified to mutual fund options in our sample. In the first case in Column 1, a twin vehicle investment option is directly replaced by its mutual fund option. In Column 2, a feeder fund vehicle that invests in the twin vehicle of a mutual fund is replaced with the original fund option. Option Size is the option's dollar value of assets (in millions). Relative Option Size is the ratio of assets invested in an option to plan assets. Vehicle-level variables are based on the mutual fund part of an investment product and include fund age, fund size (in billions) as measured by total assets under management, the volatility of monthly fund returns, turnover, the expense ratio, indicator variables for an investment strategy class (Equity, Fixed Income, Allocation, or Other), and mean performance percentiles. Performance percentiles are calculated over the previous three years based on mutual funds of the same Morningstar category in the Morningstar fund universe. Significance levels for tests of the difference in means are denoted by *, **, and ***, which correspond to the 10%, 5%, and 1% levels, respectively.

	(1)	(2)	(3)	(4)	(5)
Variable	Reclass. Opt. Case 1	Reclass. Opt. Case 2	Non-Reclass. Opt.	Diff. (1)-(3)	Diff. (2)-(3)
Option Size (in M)	0.88	0.67	1.33	-0.45	-0.66
	(1.99)	(0.94)	(3.42)	(0.31)	(0.42)
Relative Option Size (in %)	3.27	4.41	4.20	-0.93*	0.21
	(4.55)	(4.77)	(5.22)	(0.48)	(0.63)
Expense Ratio (in %)	0.72	0.63	0.75	-0.02	-0.12***
	(0.32)	(0.28)	(0.36)	(0.03)	(0.04)
Turnover (in %)	52.41	67.89	41.74	10.67	26.15***
	(92.89)	(127.53)	(53.93)	(6.93)	(8.53)
Age (in years)	15.81	16.88	12.94	2.86***	3.93***
	(10.61)	(14.13)	(8.06)	(0.97)	(1.17)
Fund Size (in B)	14.51	25.58	27.13	-12.62	-1.55
	(40.97)	(32.46)	(119.84)	(15.36)	(19.03)
Return Std.Dev. (in %)	3.71	4.18	4.69	-0.98***	-0.51
	(1.77)	(2.17)	(2.68)	(0.30)	(0.35)
Prior 3-Yr. Perf. (Percentile)	59.77	64.15	51.88	7.90***	12.27***
	(25.53)	(26.40)	(25.95)	(3.01)	(3.51)
Equity Strategy (in %)	61.90	44.26	65.31	-3.41	-21.05***
	(48.85)	(50.08)	(47.63)	(5.54)	(6.41)
Fixed Income Strategy (in %)	14.29	16.39	5.47	8.82***	10.92***
	(35.20)	(37.33)	(22.75)	(2.84)	(3.26)
Allocation Strategy (in %)	23.81	39.34	29.22	-5.41	10.13*
	(42.85)	(49.26)	(45.51)	(5.25)	(6.14)
Observations	120	68	86,339	86,459	86,407