Investing with Purpose: Evidence from Private Foundations

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Abstract

We study the asset allocation and investment performance of U.S. private foundations that support the charitable sector. Large foundations generated positive risk-adjusted returns before 2008, driven by early access to private equity and venture capital funds, but have underperformed since. The median foundation underperforms by more than 100 basis points. Foundations with concentrated stock holdings achieve higher returns but assume more risk. Due to the constraints imposed by the 5% minimum spending rule and accommodating monetary policy, foundations increase risk-taking and reach for yield. Over time, a conservative asset allocation decreases real wealth, reducing charitable giving.

Keywords: Asset Allocation, Institutional Investors, Performance, Private Foundations

JEL Classification: G11, G23, G32, L31

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Disclosure Statement

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I have nothing to disclose.

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I have nothing to disclose.

The United States has the world's largest philanthropic sector, with over 120,000 private foundations managing more than $1.5 trillion in assets. Private foundations are generally funded by individuals, families, or corporations, and they support charitable causes by providing grants to public charities or directly carrying out their own philanthropic programs. Founders retain control over donations and foundation assets, including their appreciated stock, which offers significant tax benefits. Designed to operate in perpetuity, private foundations rely primarily on investment earnings rather than fundraising to sustain their endowments and support charitable giving.

Despite their scale, philanthropic significance, and unique structure, private foundations' asset allocation choices and investment performance remain largely unexplored.[1] Unlike other institutional investors and nonprofits, private foundations must distribute at least 5% of their investment assets annually or face tax penalties. This requirement directly links investment performance to long-term sustainability and charitable impact. Additionally, donor control and the potential for foundations to outlive their founders introduce agency conflicts that might influence portfolio choices and ultimately performance.

This paper leverages the unique characteristics of private foundations—limited fundraising, pervasive concentrated portfolios, long-term investment horizons, and mandated annual spending rates—to examine their portfolio decisions and investment performance. First, drawing on the theoretical framework of Campbell and Sigalov (2022), we test whether foundations "reach-for-yield" by increasing allocations to riskier assets in response to falling real interest rates. Second, we estimate the risk-adjusted returns of private foundations over the last three decades to evaluate whether agency conflicts from donor control hinder performance or whether governance structures and investment sophistication mitigate these conflicts, leading to superior returns. Specifically, we study the performance of concentrated foundations—those holding most of their portfolios in a single asset, often donated by the founder—and the performance of foundations as limited partners (LPs) in private equity buyout and venture capital funds. Lastly, we conduct a simulation to examine how a foundation's risk tolerance, lifespan, and urgency of charitable giving affect its endowment assets and spending policy.

[1] In 2020, private foundations accounted for 19% of the $471 billion donated to U.S. charities (Giving USA Foundation 2021), while the broader nonprofit sector made up about 5.9% of U.S. GDP (Independent Sector 2021).

We use novel data from the IRS Statistics of Income (SOI) division, which manually reviews, cleans, and processes balance sheet and income statement information, as well as detailed governance and operational data, from Form 990-PF filings of private foundations spanning 1991 to 2020.[2] The SOI filings include all reporting foundations with over $10 million in total asset fair market value, as well as a sample of smaller foundations selected at decreasing rates based on asset size. Although private foundations do not directly report investment returns, we estimate net investment performance based on changes in net asset values (NAV) unrelated to charitable inflows and outflows. Additionally, we augment this dataset with information on large individual stock holdings from the IRS Form 990-PF corporate equity schedule attachment and commitment-level data on LP investments in private equity funds from PitchBook.

Campbell and Sigalov (2022) show theoretically that reaching for yield (risk-taking when interest rates decline) arises from imposing a sustainable spending constraint on an infinitely-lived investor. Private foundations, which primarily seek to operate in perpetuity and must pay out 5% of their fair market value of net investment assets each year, represent a good laboratory to study the reach for yield channel. We find that private foundations reach for yield and invest in riskier asset classes when the real interest rate declines, which makes the 5% threshold more difficult to meet. To further support this channel, we compare foundations that previously spent near the 5% threshold (constrained) and those with spending rates exceeding the threshold (unconstrained). We find that constrained foundations, limited in their ability to reduce spending, exhibit stronger reaching for yield behavior in their asset allocations than unconstrained foundations. Additionally, we observe significant variation in reaching for yield behavior by foundation size: smaller foundations predominantly increase their allocations to equities, while larger foundations shift towards other investments (e.g., alternative assets).

More importantly, our data enable us to examine the investment performance of private foundations. Proponents of increasing the 5% spending rule argue that the marginal benefit of immediate charitable giving outweighs the value of investing for future use, especially as agency costs tend to rise when a foundation outlives its founder (Galle 2015; Alvarez

[2] Most tax-exempt organizations file Form 990, including Schedule D, which provides data on endowment funds, investment earnings, fees, and market values. This data is available starting in fiscal year 2009 (in XML format from 2011 onward) and covers only public charities under Section 501(c), excluding private foundations. For a detailed discussion of endowment funds, see Dahiya and Yermack (2021).

2022; Galle 2021; Levine 2019). Our work provides a detailed analysis of their investment performance to inform this debate. We first confirm industry findings that, in aggregate, private foundations have underperformed a 60/40 portfolio since 2007.[3] However, we also document that private foundations outperformed a 60/40 portfolio from 1991 to 2007. Over the full period from 1991 to 2020, private foundations achieved an annual value-weighted return of 8.8%, slightly trailing the 9.1% return of a 60/40 portfolio. Performance varied significantly over time. From 1991 to 2007, private foundations outperformed the 60/40 portfolio by 0.3% annually (10.5% vs. 10.2%), while from 2008 to 2020, they underperformed by 1.0% annually (6.6% vs. 7.6%). In the cross-section, larger foundations outperform smaller ones, with value-weighted returns exceeding equal-weighted returns by approximately 1.0% annually. The median foundation underperforms a passive benchmark, trailing by more than 2 percentage points per year over the past 30 years.

Notably, these descriptive return differences persist even after regressing foundation returns onto factors derived from common asset indices. On a risk-adjusted basis, foundations with assets exceeding $500 million generate alphas of about 75 to 100 basis points annually, while risk-adjusted returns are monotonically decreasing in size. We find that a significant portion of return variability can be attributed to asset allocation exposure to domestic and international equity, fixed income, and hedge funds. However, larger foundations seem to carry out more active investment programs, as their returns cannot be fully explained by these benchmark indices.

There are several potential explanations for the estimated outperformance of large foundations. First, the outperformance might stem from foundations taking idiosyncratic risks not captured by our model. For example, many private foundations hold concentrated stock positions from the initial donor's gift, which carry significant idiosyncratic risk. Second, larger foundations might exhibit skill in timing their asset allocation decisions relative to market conditions. For example, private foundations were early adopters of alternative assets, with our sample showing a growing allocation over time (Lerner, Schoar, and Wongsunwai 2007). Third, private foundations might achieve outperformance through superior security selection, identifying and investing in better-performing assets. Larger foundations often have sizable in-house investment teams and might gain enhanced access to desirable private asset classes due to their mission statements and wealthy family networks. When we partition

[3] See for example: https://foundationmark.com.

our sample into foundations that are not concentrated and those with smaller allocations to other investments, we find that the median estimated performance of the largest foundations becomes negative, suggesting a correlation between these factors and investment performance.

When excluding private foundations with concentrated stock positions from our risk-adjusted analysis, we find our estimated alpha declines in magnitude by about half. This suggests that foundations with concentrated holdings either outperform directly—through the holding or the rest of the portfolio—or that their idiosyncratic risk exposures are difficult to capture. To better understand the impact of concentration on performance, we manually collect data on the stock positions of foundations with assets exceeding $250 million at any point during the sample period, using the corporate equity schedule attachment to Form 990-PF. Surprisingly, we find that over 10% of the largest private foundations allocate more than 40% of their investment assets to a single stock. We document that foundations with concentrated holdings have higher net returns of about 3%. However, concentration results in a nearly identical Sharpe ratio, which better accounts for the idiosyncratic risk concentrated foundations bear. When controlling for the return of the concentrated holding, we find that the performance of the concentrated holding largely drives the portfolio return, rather than the remainder of the portfolio. Our results suggest that the connection between positive risk-adjusted returns and outperformance is in part driven by the difficulty in capturing a foundation's true risk exposures rather than reflecting true outperformance.

Our estimated measure of outperformance is also linked to a foundation's exposure to other investment assets (e.g., alternative assets). When excluding foundations with allocations above 20% to other investment assets, we find that estimates of outperformance weaken. Additionally, including a pooled private equity and venture capital factor directly causes average alphas for the largest foundations to drop to just 40 basis points, suggesting that their outperformance is largely driven by exposure to alternative assets. Using commitment-level data from PitchBook, we find that private foundations have outperformed in private equity by investing in funds with higher internal rates of return (IRR) compared to other LPs. We find this outperformance is largely concentrated in venture capital investments with fund vintages before 1998, consistent with Lerner, Schoar, and Wongsunwai (2007) and Sensoy, Wang, and Weisbach (2014), but larger foundations appear to outperform in the 1999–2006 vintages as well. To understand whether this superior performance is driven by investment skill or access, we examine the investment performance of private foundations in first-time funds, which require an initial selection decision with limited information, compared to their performance in subsequent funds. Overall, we find that the superior performance of private foundations in private equity is driven more by access than skill, as their outperformance is concentrated in funds later in a general partner's life.

We conclude with a simulation to understand how asset allocation choices impact private foundations' ability to sustain wealth (and future charitable distributions) and how the optimal spending rate varies as a function of a foundation's longevity and urgency of its charitable goals. Our simulation results underscore the need for foundations to employ increasingly aggressive asset allocation strategies and to rely more heavily on alternative assets for return diversification and growth potential. In our simulation, the only portfolios that maintain their real principal balances over a 25- or 100-year period at least 40% of the time—based on current, forward-looking return expectations—are those fully allocated to equities or heavily allocated to alternative assets. We find that the optimal spending rate for foundations with shorter 25-year lifespans and high urgency causes is around 7%, while foundations with longer 100-year lifespans can best support their charitable objectives with a spending rate at or below 5%.

Related Literature. Our paper contributes to the literature on institutional investors' portfolio performance by examining the investment performance of private foundations, an area previously unexplored. Our work builds on studies of nonprofits (Heutel and Zeckhauser 2014; Galle 2015; Lo, Matveyev, and Zeume 2021), pension funds (Andonov, Bauer, and Cremers 2012; Andonov, Hochberg, and Rauh 2018), and university endowments (Brown, Garlappi, and Tiu 2010; Binfarè et al. 2023; Binfarè and Harris 2024; Lerner, Schoar, and Wang 2008). Dahiya and Yermack (2021) first document endowment fund underperformance from 2009 to 2018 using IRS data. While we confirm this underperformance, we expand the analysis to cover a three-decade period (1991–2020) and highlight significant time-variation in performance. We leverage private foundations' unique characteristics—such as donor control and concentrated portfolios—to study the mechanisms behind their initial outperformance.

Our work is also closely related to the literature studying the performance of various LPs in private equity and venture capital funds. Lerner, Schoar, and Wongsunwai (2007) first document the outperformance of "endowment" LPs (universities and foundations) during the 1991–1998 period, particularly in venture capital. Sensoy, Wang, and Weisbach (2014) show this advantage disappears in the following decade. Cavagnaro et al. (2019) finds that institutional investors exhibit varying levels of skill in selecting private equity investments, with higher-skilled investors consistently earning superior returns. More recently, Lerner et al. (2022) examine LP investments in alternative vehicles in private equity. We contribute to this sparse literature by focusing specifically on the performance of private foundations over the last 30 years. Our findings, while similar in direction to theirs, contribute to an understanding of heterogeneity of LPs over time, across size groupings, and account for a private foundation's entire portfolios.

Finally, we contribute to the literature on reaching for yield behavior in the context of pensions funds (Lu et al. 2019; Andonov, Bauer, and Cremers 2017), individual investors (Lian, Ma, and Wang 2019; Kent, Garlappi, and Xiao 2021), and other financial intermediaries (Becker and Ivashina 2015; Di Maggio and Kacperczyk 2017; Choi and Kronlund 2018; Jiang and Sun 2020; Crook 2012). Campbell and Sigalov (2022) theoretically show that reaching for yield arises from imposing a sustainable spending constraint on an infinitely lived investor. Our paper provides empirical support for Campbell and Sigalov (2022) in showing that private foundations, an infinitely lived investor, reach-for-yield, and we also provide the first evidence of reaching-for-yield behavior among a nonprofit organization.

1 Data and Measurement

1.1 Sample

We download microdata files for all Forms 990-PF included in the Internal Revenue Service (IRS) Statistics of Income (SOI) study of private foundations.[4] The SOI data consist of a stratified, asset-weighted random sample of all 990-PF filings in a given tax year, including every foundation with total assets exceeding $10 million in fair market value, as well as a representative sample of foundations below this threshold.

The sampling rate for smaller foundations decreases as their total asset value declines. We use this subset of 990-PF filings as it includes the fair market value of investment assets, allowing us to estimate investment performance measures.[5] Although this sample includes

[4]The IRS makes the harmonized data available here.

[5]Compared to direct IRS filings, the SOI extract of 990-PF filings has the advantage of the IRS staff verifying and, when needed, adjusting reported data. These adjustments include reconciling asset allocations using supplementary documentation, reclassifying "other investments," and accounting for parent-subsidiary

fewer than 20% of private foundation filings, it accounts for over 80% of the total fair market value. In tax year 2020, private foundations with more than $100 million in total assets made up just 1.53% of the over 100,000 reporting foundations but represented nearly 70% of the total asset fair market value.

We exclude observations with limited asset allocations to investment assets, cash and savings (as a fraction of total assets), obvious clerical errors, foundations that hold controlled entities, and those that terminate their charitable status.[6] The Data Appendix provides a more detailed explanation of the filtering process and sample construction, which results in a final sample of 289,886 observations. To facilitate comparisons of private foundations' return performance and growth across time and asset size categories, we create an inflation-adjusted measure of the fair market value of total assets using CPI data from the Federal Reserve Bank of St. Louis.

Table 1 provides a general summary of the 990-PF's universe of reporting foundations, total asset values, and aggregate distributions and contributions over time by tax year. The number of reporting foundations has increased from just over 4,000 in 1991 to nearly 20,000 in 2020, representing a cumulative average annual growth rate of nearly 6%. The entry of private foundations into the sample reflects both the creation of new foundations and an increasing number of existing foundations surpassing the sampling threshold of $10 million in total assets, at which point they are included with certainty. Similarly, the exit of private foundations from the sample includes both foundations that have ceased operations and those not selected as part of the SOI's sample. The creation of private foundations tends to occur more frequently during periods of economic growth following recessions, such as in 2003 and 2008 to 2010, while foundations are more likely to exit the sample during periods of negative investment returns.

Figure 1 illustrates the growth of the SOI sample of private foundations' total assets, fair market value of investment assets, distributions, and contributions over time. Total assets grew from approximately $100 billion in 1990 to over $1 trillion in 2020, driven by

relationships among foundations. For example, while the SOI data includes the Bill & Melinda Gates Foundation Trust, it excludes the Trust when held by a related entity. Consequently, unlike the 990-PF, the SOI data for the Bill & Melinda Gates Foundation does not include the Trust.

[6]We exclude foundation-year observations where less than 85% of total assets are classified as investments, savings, or cash equivalents to focus on foundations that allocate most of their assets to financial securities, both marketable and non-marketable, rather than those holding substantial non-investment assets (e.g., art, program-related investments, or land). See filter 1 of section IA.1.1 for further details.

both increases in asset valuations from investment performance and donor contributions to existing and newly established private foundations. Similarly, distributions rose steadily from around $6 billion in 1990 to over $60 billion in 2020, reflecting the growth in foundations' real principal and their sustained support for charitable causes.

Panel A of Table 2 presents descriptive statistics on consolidated data of the fair value of total assets, contributions, and distributions. The average (median) foundation has about $43 million ($7 million) in total assets. Many foundations depend on their investment performance alone to sustain themselves, as evidenced by the minimal contributions to the foundations in our sample (median of $0). The median foundation spends 5% of its investment assets annually to meet the mandated threshold, while the average foundation spends 6.9%. For comparison, higher education institutions reported an average spending rate of 4.6% and received average gifts of $16.1 million in fiscal year 2020 (NACUBO-TIAA 2020). In terms of legal structure, approximately 31% of foundations are charitable trusts. Private operating foundations account for just 2% of the total, while corporate foundations make up about 1%.

1.2 Asset Allocation

Investment assets on Form 990-PF and in the SOI harmonized data are classified into six categories: government debt, corporate debt, corporate stock, other investment assets, investments in land, buildings, and equipment, and investments in mortgage loans. "Other investment assets" (henceforth, other investments) include those not classified under any other category. This group primarily consists of non-traditional investments such as private equity and venture capital funds, hedge funds, and real assets. However, it may also include more traditional investments or commingled funds if the foundation reports them in this category. The IRS SOI team manually reviews the asset lists reported in this category on Form 990-PF, as filed by foundations, and when appropriate, reclassifies holdings into more specific categories within the harmonized microdata. Reclassification from other categories into other investments is less common.[7] From 1990 to 2020, the asset allocation of private foundations has shown significant increases in weighting to riskier asset classes of equity and other investments at the expense of fixed income. Private foundations' allocation to government debt has fallen from nearly 20% in 1990 to just 2% in 2020 coinciding with the

[7] We provide additional details on the validity of these classifications in Section IA.1.3 in the Internet Appendix.

declining yield of U.S. treasury debt over this period (see Figure 2).[8] Meanwhile, allocation to equity and other investments have increased from about 40% of investment assets in 1990 to nearly 80% in 2020.

Panel B of Table 2 summarizes private foundations' asset allocation over the sample period. On average, foundations allocate 10.80% of their assets to cash and savings equivalents and 5.60% to government bonds. This indicates that the need to maintain sufficient liquidity for distributions throughout the year results in relatively consistent allocations to cash and government bonds.[9] In contrast, there is significant variation in foundations' exposure to "risky" assets across size categories. Smaller foundations tend to allocate more to corporate bonds and equity, while larger foundations invest a greater share in other investments, which largely consist of alternative assets. For example, the largest foundations allocate nearly 10 percentage points more to other investments compared to smaller ones (24.9% versus 15.4%). Detailed results on asset allocation across inflation-adjusted size groupings are presented in Table IA.1.

1.3 Investment Performance

We estimate the net return of private foundations using publicly available information from IRS 990-PF filings as they do not directly report their investment returns. Specifically, we estimate the growth in assets unrelated to charitable activities—such as contributions to and distributions from the foundation—using the following equation:

$$R_{i,t} = \frac{\Delta \text{NA}_{i,t} - \text{Contr.}_{i,t} + \text{Distr.}_{i,t} - \text{Inv. Fees}_{i,t} - \text{Taxes}_{i,t}}{\text{Inv. Assets}_{i,t-1} + \tau_c \times \text{Contr.}_{i,t} - \tau_d \times \text{Distr.}_{i,t}} \tag{1}$$

where $\Delta\text{NA}_{i,t}$ denotes the annual change in net assets (fair market value of total assets minus liabilities) for private foundation i at time t. Contr._{it} represents the total contributions, gifts, and grants received as inflows, while Distr._{it} captures distributions made to charitable

[8] The 10-year U.S. treasury yield has fallen from 8.43% in January 1990 to 0.93% in December 2020. While declines in yields benefit current investors in fixed income, most private foundations appear to hold fixed income for its generation of current income, which is forecasted on a forward-looking basis.

[9] For instance, the McKnight Foundation's 2019 audited financial statement specified that a majority of endowment assets should be in investments with liquidity of less than 30 days, targeting a 12% allocation to highly liquid fixed income and cash investments. See https://www.mcknight.org/wp-content/uploads/2019-McKnight-Financial-Statement.pdf.

purposes and expenses (including operating and administrative expenses) which collectively count towards the 5% spending rule as outflows from the foundation.[10] We further subtract disclosed investment fees and current excise taxes (which are included in Distr._{it}) because they represent investment-related expenses. To estimate net returns, we divide by the beginning-of-year investment assets, adjusted for the timing of inflows and outflows, following Dahiya and Yermack (2021), with $\tau_c, \tau_d = 0.5$ (half-year). Note that we include cash and savings in the denominator to adopt a conservative approach when estimating returns. The Data Appendix describes calculation details and robustness checks to our return measure.

To validate our measure of net returns estimated from Equation 1, we retrieved audited financial statements (AFS) for the 31 largest private foundations for fiscal years 2008 and 2019.[11] The year 2008 experienced large, negative returns, whereas 2019 coincided with a bull market. This comparison allows us to evaluate our estimated returns against those derived from AFS during two distinct market scenarios, ensuring that our measure performs reliably in both contexts.

Table A.1 shows that the discrepancy between the returns estimated using the AFS and the 990-PF is small. For fiscal year 2008, the mean (median) annual return estimated using the AFS and 990-PF is -23.70% (-25.54%) and -23.81% (-25.65%), respectively. Similarly, for fiscal year 2019, the mean (median) annual return estimated using AFS and 990-PF is 14.08% (15.90%) and 14.11% (15.88%), respectively. The correlation between the two return series is high, at 99.89% in 2008 and 99.93% in 2019 (99.99% if aggregated). Furthermore, the 990-PF return measure over/underestimates the AFS return about half the time in 2008 and 2019, suggesting limited bias in our return calculation methodology. Finally, the correlation between the discrepancies in 2008 and 2019 is nearly zero, suggesting that our estimation procedure does not systematically overstate or understate a foundation's return over time. Our calculated return measure is also very similar to a subset of private foundations which

[10] $\Delta\text{NA}_{i,t}$ is included because increases in net assets correspond to investment gains (either realized or unrealized), while declines in net assets correspond to investment losses (either realized or unrealized), after removing the influence of the foundation's unrelated investment cash flows. We subtract Contr._{it} to offset its mechanical, positive impact on net assets and add back Distr._{it} to offset its mechanical, negative impact.

[11] While AFSs do not typically provide a direct return calculation, they include itemized disclosures of investment income, net realized gains/losses, and net unrealized gains/losses, as well as the total amounts of direct investment expenses and excise taxes. The primary challenge with our estimation procedure lies in the absence of readily available unrealized gains/losses amounts in the IRS SOI data. Equation 1 addresses this by inferring unrealized gains from inflows and outflows.

directly disclose their investment returns in their annual reports (or websites) as shown in Table A.2.[12]

Panel C of Table 2 provides detailed information on the investment performance of private foundations. The average (annual) net investment return is 7.79% (9.90% on an asset-weighted basis). As a comparison, the average net investment return for the universe of institutions reporting to NACUBO over the same period is 8.05%, while the average asset-weighted return is about 9.82%.[13] Larger foundations significantly outperform smaller foundations, in addition to paying lower direct investment fees as a fraction of AUM. In fact, the average foundation pays investment management fees of 69 basis points compared to an (untabulated) asset-weighted average of 49 basis points.

2 Asset Allocation Decisions of Private Foundations

Asset allocation decisions play a critical role in driving asset growth and enhancing investment sophistication for institutional investors like private foundations and university endowments. In the context of private foundations, asset allocation policies are particularly important for four key reasons. First, they are a primary determinant of portfolio total returns (Brinson, Hood, and Beebower 1986; Brinson, Singer, and Beebower 1991). Second, many private foundations begin with a concentrated endowment, often in the form of common stock from a single donor, which significantly heightens concentration risk in their early years.[14] Third, a foundation's liquidity needs, spending policy, and asset allocation decisions are closely interrelated. Finally, the requirement to distribute 5% of their fair market value of investment assets annually might incentivize risk-taking, especially in low-interest-rate

[12] Another benefit of using IRS SOI data is that our approach is both rigorous and transparent, as it applies the same methodology across all foundations. By contrast, outside audited IRS filings, foundations may compute returns using varying methods, such as: (1) exclusion of cash and saving equivalents from investment assets; (2) different valuation timing and audit of NAV for illiquid alternative assets; (3) differing accounting of program-related investments; and (4) exclusion or inclusion of accrued interest and dividend receivables in investment assets.

[13] We have computed these figures using publicly available historical returns from NACUBO retrieved from https://www.nacubo.org/Research/2022/Historic-Endowment-Study-Data.

[14] For example, the Ford Foundation initially held 92,697,240 shares of Ford Motor Company in 1955, representing 83.4% of the company's outstanding stock and 100% of the foundation's initial holdings (see Nelson 1967). By 1974, the foundation had divested all its Ford Motor stock and has since operated independently with no Ford family affiliation (Ford Foundation 2022).

environments.

We first investigate the asset allocation choices of private foundations by regressing the allocation to an asset class on a vector of foundation characteristics. These characteristics include the natural logarithm of a foundation's investment assets at the start of the year, the natural logarithm of a foundation's age, investment fees, distributions from the foundations and contributions to the foundation, the natural logarithm of one plus the number of employees whose pay is greater than fifty thousand dollars, the natural logarithm of one plus the number of unpaid directors and trustees, and indicator variables for whether a private foundation is a charitable trust, operating foundation, or a corporate foundation. We also control for fiscal year fixed effects and a foundation's last reported National Taxonomy of Exempt Entities (NTEE) code to control for macroeconomic shocks to all foundations in a given fiscal year and time-invariant unobserved features common to foundations supporting similar philanthropic causes.

Table 3 presents results on cash holdings and allocations across the four main investment asset classes. Column (1) examines the determinants of cash holdings, showing that larger foundations hold less cash, likely due to greater investment sophistication, while operating foundations maintain higher cash levels to support their own charitable programs. Unsurprisingly, higher investment fees correlate with lower cash allocations. Additionally, higher inflows and outflows (e.g., contributions and distributions) are associated with larger cash holdings, highlighting a strong connection between non-investment operations and liquidity management. Column (2) shows that larger and older foundations allocate more to government bonds, suggesting their liquidity needs are managed through exposure to risk-free debt rather than cash. Columns (4) and (5) focus on risky assets, examining allocations to equity and other investments. Larger foundations allocate more aggressively to equity and other investments.[15] Related to governance, foundations with more highly paid staff and board members tend to invest more in other investment assets and less in public equity. Consistent with the active nature of alternative assets, we find a strong positive correlation between investment fees and the share of assets allocated to other investments.

[15]Figure IA.1 illustrates the non-parametric relationship between foundation age and asset allocation by grouping foundations into age quartiles. Figure IA.2 shows a positive relationship between foundation age and returns, while spending ratios decline with age. Figures IA.3 and IA.4 provide analogous analyses by foundation type.

2.1 Reach for Yield by Private Foundations

Portfolio choices could also arise because of reaching for yield behavior by institutional investors or individuals. Campbell and Sigalov (2022) theoretically show that reaching for yield (risk-taking when interest rates decline) arises from imposing a sustainable spending constraint on an infinitely lived investor. Private foundations, which seek to operate in perpetuity and must pay out 5% of their fair market value of investment assets each year, represent a good laboratory to study the reach for yield channel.

To identify the effect of reaching for yield by private foundations, we initially estimate the following model relying on time series variation:

$$Y_{i,t} = \beta \, \text{Yield}_{t-1} + \gamma \mathbf{X}_{i,t} + \delta Y_{i,t-1} + \nu_i + \varepsilon_{i,t} \tag{2}$$

where $Y_{i,t}$ is a foundation's asset allocation to an asset class, $Yield_{t-1}$ is the 10-year treasury constant maturity rate, $\mathbf{X}_{i,t}$ is a vector of contemporaneous controls, Y_{it-1} is the lagged dependent variable, and ν_i represents foundation fixed effects to control for time-invariant unobservable characteristics within a foundation.[16] We use asset allocation weights based on fair market values rather than book values, as some foundations report fair market values under the book value entry.[17,18]

The results in column (1) of Table 4 Panel A show that a 1% decline in the yield on the 10-year Treasury rate is associated with a 69 basis point increase in the allocation to equity. The results in column (3) document a 55 basis point increase in a private foundation's asset allocation to other investments for a 1% decline in interest rates, while column (5) shows that this shift comes largely at the expense of government bonds (81 basis point decrease).

Our initial results confirm the presence of reaching for yield behavior by private foundations by using time-series variation in the interest rate experienced by private foundations. A key

[16] Following Angrist and Pischke (2009), we include a foundation's lagged asset allocation as a control to account for variation across time in a private foundation's asset allocation decisions by increasing the likelihood of the conditional independence assumption holding. Table IA.2 shows that our results are robust to excluding the lagged dependent variable as a control, though the effect size increases in magnitude as expected. In combination, the two models provide a reasonable bound of the estimated channel.

[17] We show in Table IA.3 that our reach for yield results are similar when using book value allocations when we condition our sample to foundations that correctly report assets at book value.

[18] We exclude private operating foundations from our analysis due to their distinct spending rule and the challenge of determining their mandated distribution requirements.

issue limiting the strength of this identification approach is that all foundations reporting within the same year experience highly correlated interest rate fluctuations. To strengthen our identification of this reaching-for-yield phenomenon, we rely on cross-sectional variation in a foundation's lagged spending ratio to proxy for the constraint it faces. We expect that a foundation with a higher lagged spending ratio above its mandated spending rate is less constrained and less likely to allocate more towards higher-yielding assets like equity and other investments in response to declines in the real interest rate due to its ability to adjust spending downwards.[19]

We rely on cross-sectional variation across a foundation's lagged qualified distribution (QD) ratio, which is constructed as the ratio between the qualifying distributions a foundation pays out and its mandated distributable amount. We study the differential impact on reaching for yield behavior across foundations with high spending or qualified distribution ratios (relatively unconstrained and lower propensity to reach for yield due to an ability to adjust spending downward) and foundations with low spending or QD ratios (constrained and higher propensity to reach for yield due to an inability to adjust spending downward) and estimate the following model:

$$Y_{i,t} = \beta_1 \,\text{Yield}_{t-1} + \beta_2 \,\text{QD}_{i,t-1} + \beta_3 \,(\text{Yield}_{t-1} \times \text{QD}_{i,t-1}) + \delta Y_{i,t-1} + \gamma \mathbf{X}_{i,t} + \nu_i + \varepsilon_{i,t} \tag{3}$$

This design specification relies on the assumption of exogenous shocks of interest rate realizations to previously endogenously chosen characteristics of private foundations for further cross-sectional identification. The results in column (2) of Table 4 Panel A show that foundations with lower qualified distribution ratios (less constrained foundations) exhibit less reaching for yield behavior.[20] The results in column (4) document similar sensitivities for constrained foundations shifting towards other investments in response to declines in yields, while the results in column (6) show this largely comes out of government bonds.[21]

[19] We thank an anonymous referee for this heterogeneous treatment effect test exploiting variation in foundations' lagged proximity to the mandated spending threshold to exogenous interest rate shocks. Private foundations with higher lagged spending ratios can also apply excess distributions from the previous four years to their current mandated distributions under the carryforward provision, offering additional flexibility.

[20] The median foundation has a lagged qualified distribution ratio of 1.02 which implies a 1% decline in $Yield_{t-1}$ is linked to an increase in its equity allocation of 71 basis points (-0.75 × -1.00 + 0.04 × -1.00 × 1.02 = 0.71%. For a foundation that spends twice the mandated amount, a 1% decline in $Yield_{t-1}$ is linked to an increase in a foundation's equity allocation of 67 basis points (-0.75 × -1.00 + 0.04 × -1.00 × 2.00 = 0.67%).

[21] Tables IA.2, IA.3, IA.4, IA.5, and IA.6 in the Internet Appendix provide more evidence for the reach for

In Panel B of Table 4 we examine heterogeneous reaching for yield behavior across asset allocations for constrained and unconstrained private foundations by a foundation's size to further support our understanding of this reaching for yield phenomenon. The results in column (2) of Panel B show that smaller, constrained foundations (foundations with a low QD ratio) are more likely to reach for yield towards equity. Conversely, there is no significant difference in reaching for yield towards equity between constrained and unconstrained large foundations. Regarding other investments, the results in column (4) document that larger, constrained foundations are more likely to reach for yield towards other investments. There is no significant difference in reaching for yield towards other investments between constrained and unconstrained smaller foundations, as expected. In contrast, columns (5) and (6) show that both small and large foundations have very similar patterns in their reaching for yield behavior out of government bonds, as evidenced by the similar coefficient estimates.

These results contribute to the vast literature on reach for yield by financial institutions and pension funds (Andonov, Bauer, and Cremers 2017; Lu et al. 2019; Becker and Ivashina 2015; Kent, Garlappi, and Xiao 2021). Overall, these results suggest that the asset allocation choices of private foundations are a function of their resources, such as age, sophistication, liquidity management, and spending behavior. Moreover, we document a shift in foundations' asset allocation from safe (i.e., government bonds) to risky asset classes (i.e., equity and other investments) over the last 30 years linked to the increased binding nature of the 5% spending constraint as real interest rates have declined. Whether (some) foundations go above and beyond the returns explained by their strategic allocation and prevailing market forces remains an open question that we address in the next section.

3 Investment Performance

The investment performance of private foundations remains largely undocumented, despite their size and role in funding the U.S. charitable sector. Although many proponents advocate for an increase in the mandated spending rate for private foundations, understanding their investment performance is an important consideration in this debate.

We begin by presenting descriptive evidence on the returns of private foundations over time and a comparison to passive public benchmarks, followed by an analysis of risk-adjusted

yield channel.

returns and a decomposition of the determinants of performance.

3.1 Variation in Returns Over Time

Figure 3 compares the investment performance of private foundations with 60/40 portfolios of domestic and global stocks and bonds. A dollar invested in the value-weighted index of private foundations in 1990 would have grown to $12.56 in 2020, corresponding to an average growth rate of 8.8%. The value-weighted return slightly underperformed the 60/40 U.S. portfolio, which achieved an average annual growth rate of 9.1%, while outperforming the 60/40 global portfolio, which had an average return of 7.7%. Overall, larger foundations outperformed smaller ones, as the value-weighted return exceeded both the equal-weighted return (7.6%) and the median net return (7.0%). The median (average) private foundation significantly underperformed the domestic 60/40 portfolio, lagging by more than 2 percentage points (1.5 percentage points) per year over the past 30 years.

Figure 4 decomposes the performance of private foundations from fiscal years 1991 to 2007 and 2008 to 2020. The top panel shows that private foundations achieved their highest relative performance before 2008, with the value-weighted group of foundations growing at an average annual rate of 10.5%, compared to 10.2% for the 60/40 U.S. portfolio. In contrast, the median foundation underperformed both the domestic and global 60/40 portfolios during this period. The bottom panel documents that this pattern of strong performance reversed after 2008 with the 60/40 U.S. portfolio outperforming the value-weighted grouping of private foundations by 1 percentage point (an average growth rate of 7.6% versus 6.6%) and the equal-weighted return by nearly 2 percentage points.[22] These descriptive statistics are consistent with Dahiya and Yermack (2021), who first document that nonprofit endowments underperformed a 60/40 U.S. equity and treasury benchmark over the 2009-2018 period using novel IRS data. The performance patterns we document over time, while interesting, might be driven by private foundations taking different levels of risk or allocating to non-traditional assets that a simple 60/40 portfolio of stocks and bonds fails to capture.

[22]The underperformance of private foundations we document after 2007 is similar in magnitude to those provided by FoundationMark©, which shows their 60/40 U.S. index outperforms their foundation tracking index by about 1.5% (7.3% versus 5.8%).

3.2 Risk-Adjusted Returns

To study the risk-adjusted performance of private foundations, we first estimate the following time series regression for each foundation:

$$r_{i,t} - r_{f,t} = \alpha_i + \sum_k \beta_{i,k} f_{k,t} + \varepsilon_{i,t} \tag{4}$$

where $r_{i,t} - r_{f,t}$ is the annual net return for private foundation i in year t, minus the risk-free rate. α_i is the abnormal performance computed using the following four factors and $f_{k,t}$ is the k^{th} factor return over the same year. Our baseline results use a four-factor model consisting of the excess return of U.S. equity (Russell 3000), U.S. corporate bonds (Bloomberg U.S. Aggregate Bond), international equity (MSCI ACWI ex-U.S.), and hedge funds (HFRI Fund-Weighted Composite).

We select these four factors, consisting of three public market indices and a non-public alternative investment class, based on a survey by CommonFund, an institutional asset management company for private foundations, which provides more fine-grained details on the asset allocation of private foundations.[23] Because the average asset allocation of private foundations to equity investments during our sample is only 55%, selecting index factors analogous to the true opportunity set of private foundations will allow us to better proxy for their underlying exposures.

As the estimation of the four-factor model requires five parameter estimates (one for each factor and the intercept) separately for each private foundation, we ensure that each private foundation in our estimation has at least seven years of returns. Our full sample of returns data from 1991 to 2020 consists of 289,886 observations for 29,466 reporting foundations, but imposing this restriction results in 253,413 observations (retaining approximately 87% of observations) for 16,684 reporting foundations that meet this threshold. To test the statistical significance of the alpha estimates, we use the bootstrap methodology described by Kosowski et al. (2006).

[23] In 2019, CommonFund's survey estimated that the average private foundation in their survey had investments of: 27% equity, 9% fixed income, 18% international equity, 42% alternatives, and 4% cash. Hedge funds make up the largest allocation to alternative assets, accounting for 14% of asset allocation or 33% of alternative asset allocation for private foundations. We prefer a parsimonious model to minimize the estimation uncertainty in model parameters and not constrain our estimation to only foundations with many reporting periods. Detailed information from the survey can be found in the full report, available here.

The estimates of risk-adjusted returns and p-values for the bootstrapped distribution are presented in Table 5.[24] Overall, the median and average private foundation underperform by approximately 1.07% and 0.48% per year, respectively. However, on a value-weighted basis, private foundations outperform by about 1.17%. These aggregate results obscure substantial variation in risk-adjusted returns across foundations of different asset sizes. For very large foundations, the bootstrapped alphas above the median are significantly different from zero, indicating positive risk-adjusted returns. Specifically, the median very large foundation outperforms by approximately 0.75%, whereas the median estimates remain negative for all other size groupings. The distribution of average alphas at the 25th percentile is negative across all size groups. However, these estimates are statistically insignificant for large and very large foundations, suggesting that the observed negative risk-adjusted returns might be attributable to random chance. In contrast, the two smallest foundation size groupings (under $10 million in investment assets) exhibit significant underperformance across nearly the entire distribution, reflecting consistently poor investment performance.

Building on the large discrepancy in descriptive returns, we document in Figure 4, we next examine how risk-adjusted investment performance varies before and after the Great Financial Crisis. Table IA.7 presents the median, mean, and style-adjusted alphas for private foundations across the 1991–2007 and 2008–2020 periods, both overall and by size groupings, against a domestic equity and bond benchmark (Panel A) and our baseline four-factor model (Panel B). Both panels show outperformance during the 15 years leading to the financial crisis, with the largest foundations earning excess returns of approximately 100 to 300 basis points per year. Additionally, risk-adjusted performance decreases monotonically by size bucket. As first documented by Dahiya and Yermack (2021), the nonprofit sector has underperformed ever since. We find similar underperformance trends in our data on U.S. private foundations. In Panel A of Table IA.7, we estimate sharply negative alphas, ranging from -90 basis points for larger foundations to more than -300 basis points for their smaller counterparts. On average, foundations underperform by more than 2% per year. When we include international equity and hedge fund factors, the average foundation still underperforms by nearly 100 basis points. There is some evidence of outperformance among the largest foundations, but as discussed below, this appears to be driven by a few institutions with concentrated positions

[24]Our main specification groups foundations into size buckets based on their average beginning-of-year inflation-adjusted fair value of investment assets.

in corporate equity or significant exposure to private equity and venture capital—factors not fully captured by our model.

3.2.1 Robustness

Our initial estimated performance measures from Table 5 might not properly account for the presence of cross-sectional dependence among returns of private foundations of similar size. To account for this dependence, we estimate time series regressions of the average foundation returns within a size group on a number of common risk factors by aggregating foundations of similar size groupings and reporting month into a portfolio. Table IA.8 displays the estimates of portfolio risk-adjusted returns overall and across size groupings. Overall, on a value-weighted basis we find slightly weaker evidence of outperformance with our estimates declining to about 60 basis points, driven predominantly by the performance of the largest foundations. On an equal-weighted basis, private foundations have an alpha of about zero, suggesting no investment skill.[25]

Since private foundations do not disclose their investment returns in their annual filing with the IRS, we have relied on our approximation via Equation 1 throughout the paper. We take a few additional steps to support our main results. First, we exclude operating foundations, as differences in the timing of inflows and outflows (due to running their own charitable programs and their different spending requirements) could affect the return estimation process. The results in Panel A of Table IA.10 show that our findings remain nearly identical. Second, we limit the sample to foundations with a December 31 fiscal year-end. As shown in Panel B of Table IA.10, the coefficients are unchanged. Third, we restrict the sample to foundations that report over the entire period. This subsample consists of foundations that have existed for over 30 years, with observations unaffected by our data cleaning or filtering, leading to more precise estimates of returns and alphas. Despite the reduced sample size, Panel C of Table IA.10 shows economically similar coefficients. Median large foundations continue to outperform by approximately 80 basis points annually, while the equal-weighted average and

[25] To better understand private foundations' investment exposure, we apply the framework of Sharpe (1992) in Table IA.9. This approach constrains the estimated regression slopes within each size grouping to be non-negative and sum to one, allowing asset class exposures to be interpreted as portfolio weights. Compared to our baseline four-factor model estimates, the largest foundations exhibit only 44 basis points of outperformance, while they engage in more active investment programs than smaller foundations, as indicated by their higher residual error.

portfolio average alphas are 86 basis points and 1.26%, respectively.

We make several design choices throughout our analysis in our calculation of returns, which we also show robustness towards. One of the key assumptions we make is that gifts and distributions occur halfway through the year on average. While distributions are often paid throughout the year to different charities, contributions received by foundations tend to be quite lumpy. In practice, as shown in Figure IA.5, gifts often occur at the end of the fiscal year, causing our measure to underestimate a foundation's true return on average. This timing of gifts aligns with Yermack (2009), who finds that the majority of CEOs' stock donations occur in November and December. In Panel A of Table IA.11 we explicitly account for the timing of non-cash gifts, and the results are nearly identical. The Data Appendix provides a detailed explanation of the gift collection process. In Panel B of Table IA.11 we assume that all distributions occur at the end of the year, which causes an overestimation of investment assets and an underestimation of returns. This extreme assumption reduces returns by about 20 basis points, but the largest grouping of foundations still outperforms. In our main design, we sort foundations into size buckets based on their average AUM, which might result in us overestimating returns for the largest foundations due to a form of survivorship bias. In Panel C of Table IA.11 we show that our results are similar in magnitude when grouping foundations based on their initial size for the largest grouping of foundations as relatively few foundations switch buckets over the sample period.[26,27]

[26]We group foundations into size categories based on their average investment assets during their initial three years, as many larger foundations remain very small until they are legally incorporated and receive the founder's initial gift. Many of the largest foundations are incorporated later in the sample, which weakens their overall performance. In fact, we observe that very large foundations with relatively few reporting years bias this estimate, as they are substantially more likely to be present during periods of underperformance for very large foundations (i.e., pre-1999 and post-2008). When conditioning on foundations that are present in the sample for at least 15 years, the estimated median and equal-weighted alpha are 70 and 57 basis points, respectively.

[27]In Tables IA.12 and IA.13, we provide additional robustness to foundation accounting method and reporting practices which might bias returns upward including carrying bonds at cost rather than fair market value, using a high-watermarking valuation approach for alternatives, cash versus accrual accounting basis, and foundations changing accounting basis. Panels A through C of Table IA.12 show similar results to our baseline findings. Panels A and B of Table IA.13 show that our results are slightly lower across all size groupings, but overall similar to our baseline results when excluding foundations that either maintain constant allocations to government or corporate bonds year-over-year at least once during the sample period or those that never decrease (e.g., mark down) other investment assets. We thank an anonymous referee for this suggestion.

3.2.2 Potential Mechanisms of Outperformance

Our initial analysis documents significant variation in the performance of private foundations across size groupings, with larger foundations outperforming relative to their expected exposures to risk factors. This outperformance might arise from three potential sources. First, larger foundations might exhibit skill in timing their asset allocation decisions relative to market conditions. For example, private foundations were among the early adopters of alternative assets, with our sample estimates showing an increasing trend over time (Lerner, Schoar, and Wongsunwai 2007). Second, private foundations might achieve outperformance through superior security selection, identifying and investing in better-performing assets. Larger foundations often employ sizable in-house investment teams and might benefit from enhanced access to desirable private asset classes due to their mission statements and wealthy family networks. Third, the estimated outperformance might be attributable to private foundations having risk exposures that our model fails to capture. For example, many private foundations hold concentrated stock positions from the initial donor's gift, which carry significant idiosyncratic risk. The risk-adjusted results in Table 6 shed light on how allocations to concentrated equity positions and exposure to other investment assets (e.g., private equity partnerships) contribute to the observed outperformance.

To assess the impact of concentrated holdings on risk-adjusted performance, we hand-collect stock holding data from the IRS Form 990-PF corporate equity schedule attachment, which is available online starting in 2001.[28] A foundation is classified as concentrated if more than 40% of its assets are held in a single corporate stock. Once a concentrated foundation is identified, we review all its filings to record the largest single stock position each year. For years before 2001, we assume a foundation was concentrated in earlier years if it is identified as concentrated in its earliest available filing. Examples of concentrated foundations include the Brin Foundation with Alphabet Inc., the W.K. Kellogg Foundation with Kellogg Company, and the Lilly Endowment Inc. with Eli Lilly & Company. Panel A of Table 6 presents the estimated risk-adjusted performance after excluding concentrated foundations. The estimated alphas for very large and large foundations decline in magnitude by approximately 60%, with reduced evidence of outperformance. This decline suggests that concentrated equity holdings contribute to the observed outperformance, either because these positions exhibit

[28]To mitigate survivorship bias, we include concentration data for all foundations with assets exceeding $250 million at any point.

idiosyncratic risk that our model fails to capture, the individual holdings deliver superior risk-adjusted returns, or the foundations with concentrated positions outperform through the remainder of their portfolio.

Panel B of Table 6 presents the risk-adjusted results after excluding foundations with high allocations to other investments, defined as those allocating more than 20% of their assets to these investments. Excluding these foundations leads to substantial declines in the estimated alphas for the median "Very Large" and "Large" foundations, reducing them to near zero. In contrast, the median alpha for very large foundations with more than 20% allocated to other investments is estimated at 1.42% per year. Panel C of Table 6 displays the combined effect when excluding both concentrated foundations and foundations with high exposure to other investments. Overall, the risk-adjusted performance for the largest grouping of private foundations ranges from a statistically insignificant alpha of -16 basis points and a median and equal-weighted alpha of about -40 basis points, which roughly matches the asset-weighted sample mean of fees of 50 basis points. These results suggest that the initial estimates of private foundations' risk-adjusted outperformance are largely driven by equity concentration and exposure to nontraditional assets. We now turn to examine these mechanisms, along with other key foundation characteristics.

3.3 Characteristics of Private Foundations and Performance

Thus far, we have shown that some of the outperformance of large private foundations is associated with the concentrated equity positions held in their portfolios. This outperformance could arise from three potential sources: the concentrated stock holdings themselves delivering positive risk-adjusted returns, the model specified in Equation 4 failing to capture the idiosyncratic nature of these concentrated holdings, or the foundations achieving outperformance through the remainder of their portfolios.

To disentangle these potential drivers, we first estimate the model:

$$\text{Performance}_{i,t} = \beta_0 + \mathbb{I}(\text{Conc.}_{i,t}) + \mathbb{I}(\text{Conc.}_{i,t}) \times \text{R}^c_{t-1:t} + \gamma \mathbf{X}_{i,t-1} + \lambda_t + \text{NTEE}_i + \varepsilon_{i,t} \quad (5)$$

where $\text{Performance}_{i,t}$ is either the net return or Sharpe ratio of foundation i in year t, $\text{Conc.}_{i,t}$ indicates whether a foundation has more than 40% of its holdings in a single stock, $\text{R}^c_{t-1:t}$ is the annual return of the foundation's concentrated stock holding, $\mathbf{X}_{i,t-1}$ is a vector of foundation controls to control for size, investment fees paid, contributions and distributions as a percentage of assets, the number of paid staff and board members, a foundation's legal structure, and its allocation to equity, government bonds, corporate bonds, and other investments.

The first two columns of Table 7 report results from regressing each foundation's net return and Sharpe ratio on a foundation's lagged characteristics for the full sample of U.S. foundations. These specifications provide a baseline for understanding which foundation characteristics correlate with performance. Larger foundations earn higher returns and also have higher Sharpe ratios, while lower investment fees also correlate with stronger investment performance. We also document a strong link between investment staff sophistication (both paid and unpaid) on overall investment performance. Foundations with larger allocations to equity and other investments earn higher returns than those with greater exposure to government or corporate bonds, while only fixed income exposure is associated with higher Sharpe ratios. Related to governance, we find that private foundations classified as corporate foundations significantly underperform, consistent with greater potential for agency costs.

The results in columns (3) to (6) of Table 7 examine the link between investment performance and concentration for the subset of foundations on which we collect concentration data. The results in column (3) show that concentrated foundations earn higher returns by about 3% per year, while column (5) shows that concentrated foundations have nearly identical Sharpe ratios to diversified foundations, suggesting their higher returns are offset by their increased idiosyncratic risk. Foundations with greater allocations to equity and other investments earn higher returns, though only alternative exposure is linked to higher Sharpe ratios. Related to governance, we continue to see that corporate foundations underperform on a risk-adjusted basis, with a much starker difference in the subset of larger foundations. Surprisingly, we find a negative relationship between size and performance, implying that the positive coefficient found in column (1) simply reflects differences between large and micro foundations. This negative coefficient estimate is likely driven by the decreasing economies of scale once a sufficient asset base mark is reached.

Are the concentrated stock holdings driving outperformance, or is it the rest of the portfolio? To tease out these two competing explanations, column (4) controls for the annual return earned by the concentrated stock, while this variable is set to zero for foundations that do not have a concentrated position.[29] Column (4) documents that concentrated foundations underperform non-concentrated foundations by about 4% when the return on their concentrated stock position is zero. This result suggests that concentrated stock holdings drive the outperformance of concentrated foundations rather than the remainder of their portfolios. Similarly, once we control for the annual return earned by the concentrated stock, the results in column (6) confirm that concentrated foundations have Sharpe ratios that are 0.22 lower than non-concentrated foundations when the return on their concentrated holding is zero. In fact, the average annual return of these individual stocks of concentrated foundations is about 21.5%, much larger than the 11.3% earned by the CRSP value-weighted return index over the same period. However, concentrated holdings have a standard deviation of returns of about 38.8%, compared to 17.2% for the CRSP value-weighted return index.

In summary, the concentration results in Table 7 show that while concentrated holdings earn higher average returns, they come at the cost of higher idiosyncratic risk, which largely offsets these gains. These idiosyncratic risk exposures are difficult for our asset class models to capture, but our findings suggest that such concentrated positions do not ultimately lead to outperformance for the largest grouping of foundations. Yermack (2009) provides novel evidence that CEOs might use private foundations for personal benefit and control rather than societal impact. Specifically, he finds that CEOs donate stock to their family foundations ahead of declines in returns, and these foundations tend to retain the donated stock rather than diversifying, allowing the CEOs to maintain voting control. Our findings of underperformance among corporate foundations are consistent with these findings.[30]

3.4 Exposure to Private Equity

Exposure to other investments, beyond traditional assets, is another key feature that correlates with the outperformance of larger private foundations. As previously shown, the average large foundation outperforms its smaller peers by about 2.5 percentage points. Even when excluding concentrated foundations, the performance gap remains around 2 percentage

[29] $R^C_{t-1:t}$ is the interactive effect of a foundation's concentration status and return on its concentrated holding. Thus, *Concentrated* is interpreted as the effect of a foundation being concentrated on its overall return when its concentrated stock position has a return of zero percent.

[30] As shown in Figure IA.4, corporate foundations exhibit the highest spending rates among all foundation types, providing some counter-evidence to this narrative. However, Bertrand et al. (2021) suggest that at least some corporate foundation spending might be driven by the corporation's for-profit motives.

points. We now examine how much of this outperformance can be attributed to differential exposure to private assets.

Benchmarking the returns of private foundations is challenging, particularly in capturing their risk exposure to private assets, given these assets' illiquidity, limited replicability, and smoothed valuations. For example, Franzoni, Nowak, and Phalippou (2012) show that private equity returns load heavily on the same liquidity factor as public equity returns, and accounting for liquidity risk eliminates excess returns. In Panels A and B of Table IA.14, we show that the outperformance of the largest foundations is partially explained by exposure to the Pástor and Stambaugh (2003) liquidity factor. After accounting for this risk, outperformance declines by about 60% (40%) for the median (average) very large foundation, suggesting that illiquidity partly explains their returns. To more directly proxy for private asset exposure, we next augment our baseline model with the annual performance of the Cambridge Associates PE index (U.S. pooled horizon IRRs for buyout and venture capital).[31,32] As shown in Panel D of Table IA.14, the estimated alpha decreases substantially: the median large foundation no longer generates excess returns, and the average large foundation's alpha falls to just 43 basis points. Overall, we find that while private asset exposure explains a sizable portion of the observed outperformance, it cannot fully account for the outperformance of the largest private foundations.

To disentangle whether the outperformance of the largest foundations is driven by strategic allocation decisions (e.g., increased exposure to private capital) or by superior performance within those allocations, we examine their performance as limited partners in private equity and venture capital funds. If private foundations outperform other LPs at the commitment level, this implies that at least part of their portfolio outperformance reflects superior fund selection beyond their asset class allocation alone. To test this, we use commitment-level data from PitchBook covering 55,236 commitments made by U.S. and non-U.S. LPs to private equity and venture capital funds with vintage years between 1991 to 2018. The data includes performance metrics for 6,148 unique LPs across 2,932 private equity funds and 1,557 venture capital funds. Further details are provided in the Data Appendix.

[31] A limitation of this proxy is that the index is based on pooled horizon IRRs, which are not directly comparable to time-weighted rates of return (Phalippou 2008).

[32] Panel C of Table IA.14 adds the one-quarter lag return in the public equity market to account for private market delayed or smoothed private equity valuations. The drop in magnitude is similar to that of Panels A and B of Table IA.14.

Panel A of Table 8 summarizes average performance across private equity (buyout and growth) and venture capital fund commitments by various limited partner types. On average, LPs achieved a net internal rate of return (IRR) of 14.3% in private equity funds, while venture capital funds yielded a slightly lower IRR of 13.6%. Returns vary substantially over time and across investor types. For example, venture capital funds raised before 1998 generated an average IRR of 43%, compared to only 2% for those launched between 1999 and 2006. Among LP types, universities exhibited the highest combined average IRR over the full sample period, at 15.3%, outperforming other institutional investors. These preliminary findings align with the results of Lerner, Schoar, and Wongsunwai (2007) and Sensoy, Wang, and Weisbach (2014), who document that the outperformance of endowments—comprising universities, nonprofits, and public and private foundations—was concentrated in earlier vintages, particularly in venture capital funds.

To more formally assess performance across LP types, we estimate the following model:

$$\mathrm{IRR}_{i,j,t} = \beta_0 + \sum_k \gamma_k \,\mathrm{LP}_{k,j} + \delta \mathbf{X}_{j,t} + \mathrm{FEs} + \varepsilon_{i,j,t} \tag{6}$$

where $\mathrm{IRR}_{i,j,t}$ is the net internal rate of return (IRR) for LP i in fund j of vintage year t. The variable $\mathrm{LP}_{k,j}$ is a set of indicator variables for LP type k (e.g., university, private foundation, public pension fund) committing to fund j. The control vector $\mathbf{X}_{j,t}$ includes the logarithm of fund size and the logarithm of the number of prior fund investments by LP i. The specification includes fixed effects for fund industry, fund vintage year by fund type, fund geography, and LP country. Standard errors are clustered at the fund level to account for intra-fund correlation, as each fund receives commitments across multiple LPs.[33]

We begin by replicating the results of Lerner, Schoar, and Wongsunwai (2007) and Sensoy, Wang, and Weisbach (2014) using the aggregated LP class of "endowments." Our point estimates are nearly identical to theirs (untabulated). To more precisely assess heterogeneity within this group, we re-estimate the model using disaggregated LP types. Panel B of Table 8 presents the results. Overall, private foundations exhibit higher fund-level IRRs by approximately 1.5 percentage points relative to the omitted category of public pension

[33]We also estimate specifications using alternative performance metrics, including total value to paid-in capital (TVPI) and excess fund IRR relative to the PitchBook benchmark (matched by fund size, vintage, and geography). These results are consistent with our baseline findings. Unfortunately, detailed cash flow data are not available to compute the public market equivalent (PME) of Kaplan and Schoar (2005).

plans—performance that is comparable to university endowments. This outperformance is concentrated in venture capital funds, especially for funds with vintage years between 1991 to 1998. While we find less evidence of outperformance after 1998, private foundations still commit to funds with average IRRs that are 1.26 percentage points higher. These results are consistent with Lerner, Schoar, and Wongsunwai (2007), who document similar outperformance and Sensoy, Wang, and Weisbach (2014), who find less persistence after 1998.[34]

How does investment performance vary across private foundation size groupings, and to what extent does this reflect superior skill versus continued access to top-performing fund managers? Table 9 addresses this initial question by splitting private foundations into size groups based on their lagged asset size before the commitment date. Overall, the largest group of private foundations (those with over $500 million in assets) achieves an IRR approximately 2 percentage points higher, more than double that of smaller foundation groups. This superior performance is driven predominantly by venture capital funds in the earlier part of the sample, though large foundations also outperform in private equity, unlike universities, whose estimated performance is near zero. These results are consistent with our supplemental risk-adjusted return results, which show that larger foundations earn higher returns, even after accounting for differences in private equity and venture capital.[35]

The results in Table 10 examine whether the outperformance of private foundations is more consistent with investment skill or continued access to top-performing managers. Following Sensoy, Wang, and Weisbach (2014) we segment funds into first-time versus later funds as first-time funds require an initial selection decision based on limited information. Outperformance in first-time funds would be consistent with private foundations having skill in manager selection, while outperformance in follow-on-funds would suggest that continued access to successful managers is the key driver. Across columns (1) to (3) of Table 10 we find limited evidence that private foundations outperform in first-time funds, although the

[34]Tables IA.15 and IA.16 find similar results using total value to paid in (TVPI) or excess IRR relative to benchmark funds matched on vintage year, size, and geography.

[35]While general partner smoothing and watermarking of NAV might contribute to the higher estimated performance of foundations with private equity exposure—by biasing returns upward and reducing reported risk exposures (Ercan, Kaplan, and Strebulaev 2024; Easton et al. 2022; Brown, Gredil, and Kaplan 2019; Barber and Yasuda 2017; Jenkinson, Sousa, and Stucke 2013)—the outperformance of private foundations in realized private equity and venture capital investments suggests that their superior returns before 2006 cannot be fully attributed to smoothing effects.

coefficient estimate for the period from 1991 to 1998 is about 4%. In contrast, the superior performance of private foundations is concentrated in follow-on funds launched later in a general partner's tenure. Given that private foundations were among the earliest investors in private equity and venture capital, their continued access to high-performing managers appears to explain much of their historical outperformance.[36] While disentangling access from skill is inherently difficult, our approach, building on Sensoy, Wang, and Weisbach (2014) and Lerner, Schoar, and Wongsunwai (2007), provides suggestive evidence consistent with the idea that access is the main driver.

In summary, private foundations, particularly the largest ones, have historically achieved strong returns in private equity and venture capital investments, with performance comparable to that of university endowments. Consistent with prior findings (Lerner, Schoar, and Wongsunwai 2007; Sensoy, Wang, and Weisbach 2014), this outperformance was most pronounced for funds raised before 1998 and has declined in more recent vintages. Our evidence suggests that this performance advantage stems more from continued access to better-performing funds than superior skill in manager selection.[37]

4 Spending Rate, Returns, and Capital Preservation

In this section, we examine how asset allocation decisions, and consequently investment performance, impact a private foundation's ability to sustain its principal and its optimal spending rate. For many foundations, the mandated 5% spending rule leads to spending decisions influencing investment policy.[38] Ana Marshall, the Chief Investment Officer for the

[36]Similarly, the results in Table IA.17 show comparable performance when private foundations reinvest in follow-on funds versus those they abandon, suggesting that reinvestment decisions reflect limited selection skill.

[37]Our analysis relies on LP commitment-level and fund-level return disclosures, which vary in their coverage across LP types. Private foundations and private universities are exempt from Freedom of Information Act (FOIA) requests, so data on their commitments come from self-disclosure, such as Form 990-PF as opposed to public pensions which have mandated disclosure for all commitments (Abuzov, Gornall, and Strebulaev 2025; Bhardwaj et al. 2025). Additionally, missing fund-level performance metrics might bias our estimates downward if foundations are more likely to invest in high-performing funds that do not report returns. For example, as of 2023, the $3.9 billion Crankstart Foundation invests 97% of its "Other Investments" assets (67% of its total portfolio) in 59 distinct funds managed by Sequoia Capital (or Sequoia Heritage), for which our data largely lacks performance information.

[38]Salamon and Voytek (1989) document this effect in their survey of private foundation investment managers, noting that this inefficiency arises because investment managers are constrained by short-term

William and Flora Hewlett Foundation's $14 billion portfolio, summarizes this approach in a recent interview with Ted Seides:

> In a foundation, I have a mandate of 5% payout. So I have to have at least 70% of equity risk in this portfolio to be able to achieve, on a long-term basis, the objective which is to grow or maintain the real spending power of the institution (Seides 2021).

A sustainable spending rate must be strictly less than a foundation's expected real rate of return to preserve its real principal, while the optimal spending rate likely depends on a foundation's purpose and time horizon.[39] If private foundations had perfectly elastic funding for charitable causes and grant-making required no skill, sustaining individual private foundations would be unnecessary as long as aggregate giving remained unchanged. In reality, foundations often target specific causes in geographically distinct areas and effective grant-making requires significant expertise (Allen and McAllister 2019). Increasing mandatory spending rates might crowd out charitable giving or accelerate the shift towards other philanthropic vehicles with no spending requirements, such as Donor-Advised Funds or 501(c)(4)'s, which have lower levels of monitoring. For example, Donor-Advised Funds which lack spending requirements, have fewer restrictions, and offer complete anonymity have grown rapidly from $32 billion in assets under management (AUM) in 2007 to $141 billion in 2020.[40]

To make broader recommendations for maximizing the real value of private foundations' giving, we conduct a simulation study to examine how their real principal values are expected to change over the next 25- and 100-year periods under different investment strategies. We sample from a multivariate, normal distribution based on quarterly benchmark index returns and inflation rates from 1990 to 2020.[41] The simulated data uses the historical covariances among asset classes and their mean returns, while the time series for illiquid alternative asset

decision-making, despite foundations' longer time horizons.

[39]Dybvig and Qin (2021) suggest setting the spending rate as $s_{i,t} = \mathbb{E}[R_{i,t}] - \frac{1}{2}\sigma^2_{i,t}$, where $\mathbb{E}[R_{i,t}]$ is the expected annual real net return for private foundation i at time t and $\sigma^2_{i,t}$ is the variance of real net returns for foundation i at time t.

[40]Over the same period, the percent of individual charitable giving to DAFs has increased from 4% to 22%. Even private foundations have begun contributing to DAFs for greater flexibility in their charitable support, donating over $3 billion to DAFs from 2010 to 2020, or nearly 1% of their total giving (Figure IA.6).

[41]Given the unusually strong performance of asset markets during this period, we supplement our analysis with forward-looking return expectations from investment consultants and institutional investors, as provided by Couts, Gonçalves, and Loudis (2023), which offer a lower bound for our simulation (Table IA.18).

classes is unsmoothed following Getmansky, Lo, and Makarov (2004). Panel A of Table 11 presents asset allocation weights for each of the four portfolios along with each portfolio's expected nominal return and standard deviation.[42]

We simulate 1,000 paths for each portfolio. The real wealth distribution paths for each portfolio are created based on these simulated nominal returns and inflation. We assume that foundations rebalance their portfolios quarterly, spend a constant 5% of their average fair market value of net investment assets, and receive no donor contributions during the simulation period.[43] Foundations also experience a time-varying inflation rate. Therefore, we focus on the following dynamics of real wealth:

$$W_t = W_0 \prod_{t=1}^{T} (1 + r_t - s_t - \iota_t) \tag{7}$$

where r_t is the total nominal return at time t, s_t is the 5% spending rate, and ι_t is the inflation rate.

Our simulation results displayed in Panel B of Table 11 confirm the necessity of foundations to employ increasingly aggressive asset allocation strategies and to increase their reliance on alternative assets for return diversification and growth potential. The first strategy, which allocates solely to fixed income, results in a private foundation sustaining its real principal base just 7% of the time over a 25-year horizon and 0% over a 100-year horizon. Under this strategy, the average foundation retains only 19% of its initial real investment assets over a 100-year period, as charitable distributions outpace real investment returns. A 60/40 portfolio performs better, finishing the simulation period with about 260% of the real purchasing power of its initial principal over the longer horizon. Strategy (3), which aggressively invests in only domestic and international equity, finishes the simulation period

[42] We exclude cash from our analysis due to its varied treatment across foundations in our sample. Cash holdings might reflect short-term liquidity needs, the recent liquidation of portfolio holdings, or investments in short-term treasuries. For reference, the median foundation in our sample holds about 4% of investment assets in cash while its mean return over this period of about 2.5% suggests its inclusion in the simulation would slightly reduce portfolio returns.

[43] Our simplifying assumptions that foundations receive no contributions and spend a constant rate of 5% without using the carry-forward provision for excess distributions are somewhat aggressive, leading to an underestimation of principal accumulation and the optimal spending rate. The average foundation uses the carry-forward provision in about 15% of reporting years or 33% of times when it has excess distributions to carry forward. On average, these carry-forward provisions cover about 10% of required distributions (approximately 0.5% of investment assets).

with much higher growth than strategy (2), but only a marginally higher likelihood (79%) of sustaining principal over the 100-year horizon, compared to 66% under the 60/40 portfolio. The significant improvement in simulated principal balances under strategy (4) reflects the advantages of investing in alternatives for diversification and growth. The average foundation using this strategy has a 3% (17%) likelihood of experiencing a decline in real principal over the 100-year (25-year) time horizon.[44]

The optimal spending rate for a private foundation likely results from a complex set of interactions between its strategic asset allocation, return volatility, mission, and time-horizon. A foundation's mission and goals inherently reflect its time preference for future consumption (e.g., real spending on charitable activities). To solve for the optimal spending rate for different portfolios, we select the spending rate that maximizes the following CRRA utility:

$$\max U(c) = \mathbb{E}\Big[\sum_{t=0}^{\infty} \delta^t \frac{c^{1-\gamma}}{1-\gamma}\Big] \tag{8}$$

where c denotes charitable consumption and depends on the wealth path and spending rate. We use a coefficient of risk aversion $\gamma = 4$. In our simulation, we use various discount rates (e.g., δ) to compute the present value of charitable giving (Campbell and Viceira 1999; Gilbert and Hrdlicka 2015; Halem et al. 2022). The philanthropic missions of private foundations lend themselves to variations in discount rates, as some charitable needs are more urgent than others. For example, private foundations working to eradicate poverty, hunger, or clean water crises would rationally spend their current invested principal more aggressively, given the high value these projects create (i.e., a lower δ). In contrast, private foundations supporting intergenerational causes such as art and higher education should prioritize maximizing the present value of their distributions by selecting a spending rate that supports long-term sustainability (i.e., a higher δ).

The expected lifespan of a foundation is another important dimension to consider. Foundations with infinite lifespans require lower spending rates to preserve their real principal over time, while those with shorter lifespans can accommodate higher spending rates, as they plan to deplete their capital within a set time frame (e.g., The Bill & Melinda Gates Foundation plans to spend all its assets within 50 years of their deaths). It is important to

[44] Panel B of Table IA.18 uses forward-looking asset class expectations from Couts, Gonçalves, and Loudis (2023) and finds that all four portfolios experience a median decline in real principal.

note that many foundations already give in excess of the 5% spending mandate, suggesting a variable threshold would not necessarily reduce short-term charitable giving. Instead, it would provide greater flexibility to private foundations to select a spending rate based on the urgency of their mission and their desired time horizon.

Panel C of Table 11 reports the optimal spending rule across different investment strategies, rate of time preferences (i.e., mission), and horizons. As expected, a shorter time horizon leads to a higher optimal spending rate. Foundations with higher expected returns and less volatile returns spend more, as principal values can be sustained. We find significant variation in optimal spending rates across a foundation's time horizon and urgency of philanthropic causes. For example, we find the optimal spending rate for foundations with shorter 25-year lifespans and high-urgency causes is around 7%, while foundations with longer 100-year lifespans can best support their charitable objectives with a spending rate at or below 5%.[45,46]

In summary, our simulation results show the difficulty of reaching a 5% real return without increases in risk-taking, especially amid a low-yield interest rate environment. We document large variation in optimal spending rates depending on the urgency of the cause a private foundation supports and its desired life span, providing evidence of the benefits of a more flexible spending rule. Many private foundations already spend in excess of the 5% mandated spending rate, which suggests setting a variable threshold would better optimize their spending patterns without large changes to aggregate giving in the short-term.[47]

5 Conclusions

Private foundations are created to provide intergenerational support to public charities and play a crucial role in philanthropy due to both their scale and efficiency of giving. The 5% minimum spending rule poses a constraint to private foundations that has significant

[45] Panel C of Table IA.18 uses forward-looking asset class expectations from Couts, Gonçalves, and Loudis (2023) and finds slightly reduced optimal spending rates due to lower expected returns of the portfolios.

[46] In the context of college and university nonprofits, Stanford's endowment spending rate is only 5%, but this giving supports 20% of the university's operating budget due to the university's endowment balance growing to $36.3 billion largely through retained investment earnings (Stanford University 2022)

[47] Private foundation spending also appears to be responsive to changes in the marginal benefit of giving. For example, Philanthropy Network (2021) documents that private foundations increased spending during the COVID-19 crisis while 41% of private foundations had incremental spending directed towards this crisis. Table IA.19 shows that private foundations increase their spending ratios in response to natural disasters at the state level. Lu and Malliaris (2024) show that private foundations respond to changing recipient needs.

implications for understanding how long-lived investors respond to operating constraints, particularly in low-yield environments.

We document large variation in the asset allocation and investment performance of private foundations over time and across size groupings. Private foundations reach for yield by shifting their asset allocation towards increasingly "risky" assets in response to the declining yield environment and mandated spending rule. Foundations with over $500 million in assets generate positive risk-adjusted returns before 2008, driven by their early access to private equity and venture capital funds, but have underperformed since. The median private foundation underperforms by about 1 percentage point, suggesting benefits to encouraging the agglomeration of foundation assets. Foundations with concentrated holdings in a single stock have higher returns but face offsetting idiosyncratic risk.

We document in a simulation that foundations must invest in riskier assets to sustain their real asset base in periods of low interest rate environments. Our simulation results also highlight the advantages of adopting a more flexible spending rule, one that adjusts based on a foundation's charitable objectives and intended lifespan. Many private foundations already give in excess of the mandated spending rate, suggesting their support for more pressing causes, while the use of DAFs suggests the benefits of allowing further smoothing in giving. Future research could explore the utility functions of infinitely lived investors to optimize their giving and assess the broader welfare implications of public versus private philanthropy.

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Figure 1: Total Assets and Flows of Private Foundations, 1990 to 2020

This figure shows total assets and investment assets (left axis), and contributions and distributions (right axis) of U.S. private foundations from IRS SOI data for tax years 1990 to 2020. Investment assets include cash & saving equivalents, government debt, corporate bonds, equity, other investments, investments in land and mortgages (includes investments in land, buildings, equipment, and mortgage loans). Figures are in billions of dollars. Contributions include contributions, gifts, and grants received. Distributions include total expenses and disbursements.

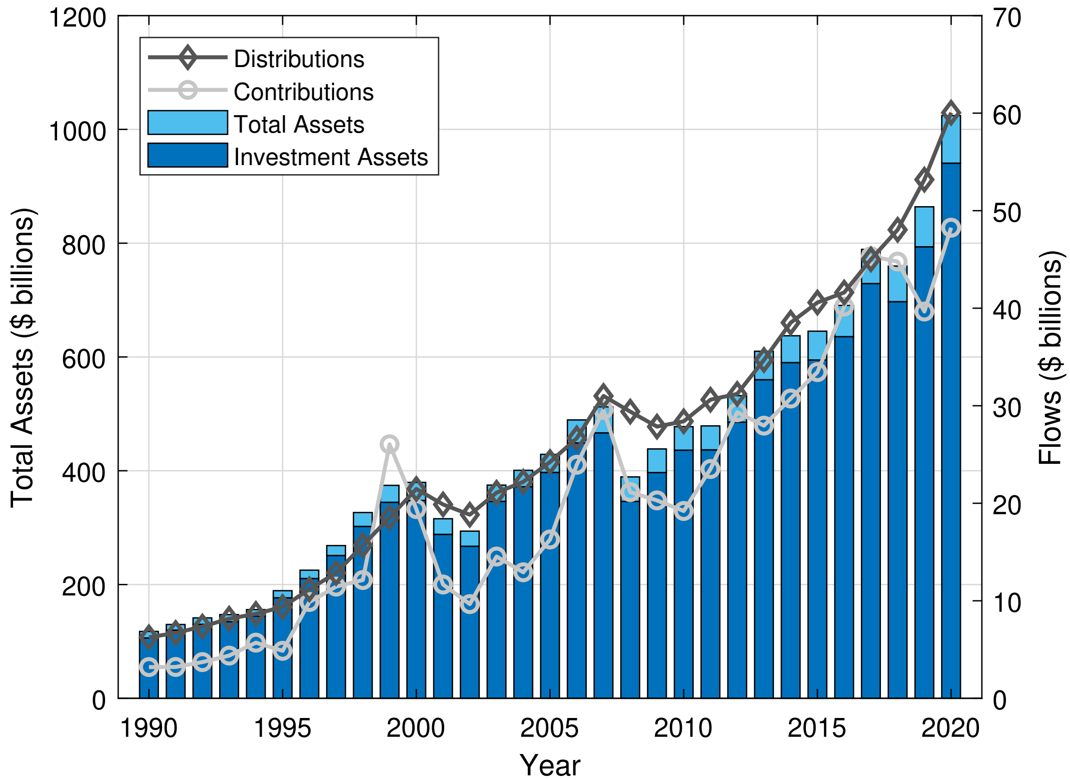

Figure 2: Asset Allocation Breakdown of Private Foundations, 1990 to 2020
This figure shows the asset allocations of U.S. private foundations to cash and savings, government bonds, corporate bonds, corporate equity, inv. other (includes hedge funds, real estate, and private equity, and other non-traditional assets), other inv. land & mortgages (includes investments in land, buildings, equipment, and mortgage loans), and other assets for tax years 1990 to 2020.

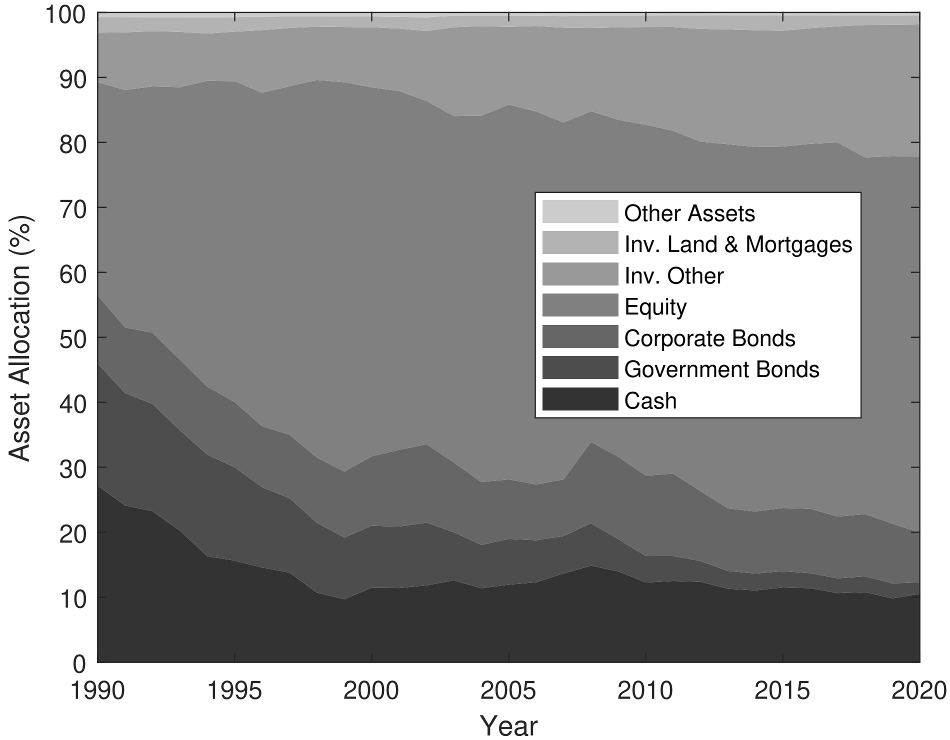

Figure 3: Comparison of Investment Returns, 1990 to 2020

This figure shows the growth of a $1 investment in U.S. private foundations from 1990 to 2020, comparing three return measures—value-weighted, equal-weighted, and median returns—against two benchmark portfolios: a domestic 60/40 portfolio (comprising the CRSP Value-Weighted Index and the Bloomberg US-Aggregate Bond Total Return Index) and a global 60/40 portfolio (comprising the MSCI ACWI Gross Total Return Index and the Bloomberg Global-Aggregate Bond Total Return Index). For value-weighted returns, each private foundation observation is weighted by its total investment assets at the beginning of the year. The figure only includes foundations with December fiscal month ends, covering 71% of reporting foundations. The annualized geometric return for each series is reported in parentheses in the legend.

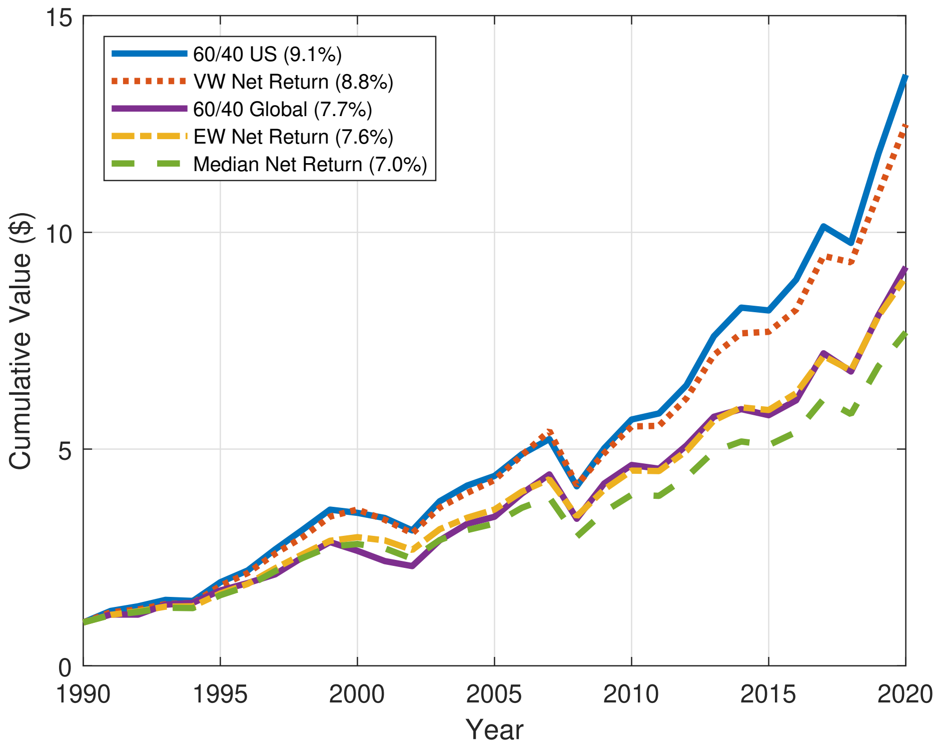

Figure 4: Comparison of Investment Returns Across Subsample Periods
This figure shows the growth of a $1 investment in U.S. private foundations from 1990 to 2007 (top panel) and 2007 to 2020 (bottom panel) comparing three return measures—value-weighted, equal-weighted, and median returns—against two benchmark portfolios: a domestic 60/40 portfolio (comprising the CRSP Value-Weighted Index and the Bloomberg US-Aggregate Bond Total Return Index) and a global 60/40 portfolio (comprising the MSCI ACWI Gross Total Return Index and the Bloomberg Global-Aggregate Bond Total Return Index). For value-weighted returns, each private foundation observation is weighted by its total investment assets at the beginning of the year. The figure only includes foundations with December fiscal month ends, covering 71% of reporting foundations. The annualized geometric return for each series is reported in parentheses in the legend.

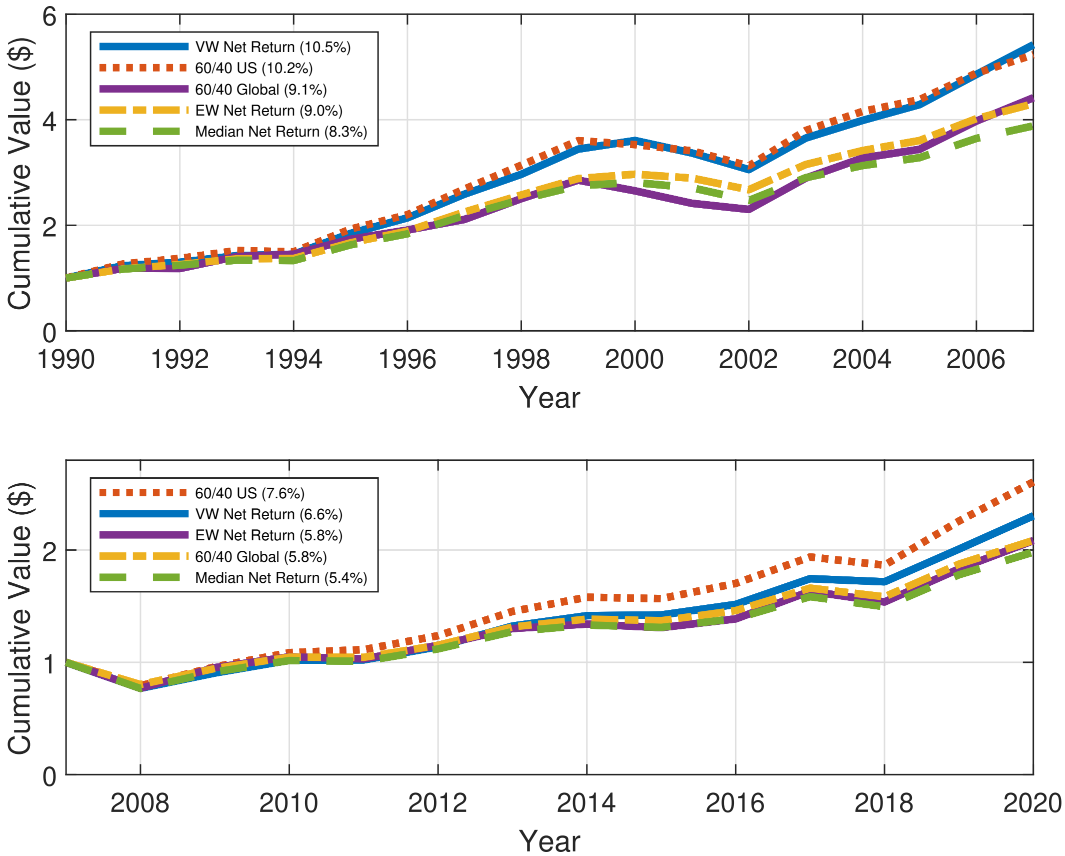

Table 1: Sample and Flows

This table reports the total number of U.S. private foundations (Total), the number entering the sample (Entry), the number exiting the sample (Exit), the total assets (in billions of dollars) of the reporting foundations, total distributions (in billions of dollars), total contributions (in billions of dollars), and the year-over-year percentage change (Δ%) in total assets, distributions, and contributions from tax years 1990 to 2020. The total number of foundations in the current year is calculated as the previous year's total plus the number entering the sample, minus the number exiting. The Internet Appendix provides detailed variable and data descriptions.

Year	Flows			Total Assets		Distributions		Contributions	
	Total	Entry	Exit	$B	Δ (%)	$B	Δ (%)	$B	Δ (%)
1990	4870	-	-	117.6	-	6.3	-	3.2	-
1991	4671	678	877	129.8	10.4	6.7	7.3	3.2	0.4
1992	4729	649	591	141.4	8.9	7.4	9.7	3.7	15.5
1993	4440	716	1005	147.2	4.1	8.2	10.9	4.4	17.9
1994	4996	1444	888	156.0	6.0	8.7	6.1	5.7	30.3
1995	5433	933	496	189.2	21.3	9.4	8.2	4.9	-14.6
1996	6599	1543	377	225.2	19.1	11.2	19.4	9.9	102.7
1997	7433	1442	608	268.5	19.2	12.9	15.0	11.5	16.0
1998	7826	1911	1518	326.6	21.7	15.7	22.0	12.1	5.9
1999	7224	1000	1602	374.3	14.6	18.5	18.2	26.0	114.8
2000	7297	837	764	379.6	1.4	21.5	15.8	19.4	-25.5
2001	5759	518	2056	315.7	-16.8	19.9	-7.4	11.7	-39.9
2002	5581	529	707	293.9	-6.9	18.8	-5.3	9.7	-17.2
2003	9326	4011	266	374.8	27.5	21.1	12.0	14.5	50.5
2004	10105	1372	593	400.8	6.9	22.2	5.3	12.9	-11.1
2005	10567	1101	639	428.9	7.0	24.2	9.2	16.3	26.0
2006	11227	1319	659	489.3	14.1	26.7	10.1	23.9	47.1
2007	11480	1102	849	512.4	4.7	31.0	16.2	29.6	23.5
2008	12948	3409	1941	389.2	-24.0	29.4	-5.2	21.1	-28.5
2009	14907	2697	738	438.4	12.6	27.9	-5.2	20.3	-4.0
2010	15588	2324	1643	477.5	8.9	28.4	2.0	19.2	-5.3
2011	15573	1590	1605	478.9	0.3	30.6	7.8	23.5	22.4
2012	16244	2024	1353	532.0	11.1	31.2	1.9	29.3	24.7
2013	17003	2207	1448	610.1	14.7	34.7	11.2	28.0	-4.7
2014	17327	1871	1547	637.3	4.5	38.5	11.0	30.7	9.9
2015	17119	1618	1826	645.3	1.3	40.6	5.4	33.4	8.8
2016	17795	2192	1516	690.7	7.0	41.6	2.5	40.2	20.1
2017	18443	2173	1525	789.1	14.3	45.0	8.2	45.3	12.9
2018	17828	1564	2179	759.9	-3.7	48.0	6.7	44.8	-1.2
2019	18406	2203	1625	864.0	13.7	53.2	10.7	39.7	-11.4
2020	19858	2739	1287	1024.2	18.6	60.0	12.9	48.3	21.7

Table 2: Summary Statistics: Characteristics of Private Foundations

This table reports summary statistics for U.S. private foundations from tax years 1991 to 2020 with valid return measure. Panel A provides figures on total assets, cash flows, and foundation characteristics. Panel B details the asset breakdown, showing the shares allocated to cash & equivalents, government bonds, corporate bonds, equity, other investments, inv. in land & mortgages (such as land, buildings, equipment, and mortgage loans), and other assets. Panel C reports the total net return of private foundations along with investment fees. Each entry summarizes data across all foundations and years, including the number of data points (N), mean, standard deviation, and percentiles (25th, 50th, and 75th). The Internet Appendix provides detailed variable and data descriptions. All continuous variables are winsorized at the 1% in both tails.

	N	Mean	SD	p25	Median	p75
Panel A: Assets, Flows, and Characteristics						
Total Assets ($M)	289886	43.35	414.00	0.68	7.01	22.90
Investment Assets($M)	289886	42.76	409.07	0.68	6.99	22.75
Contributions ($M)	289886	1.49	29.87	0.00	0.00	0.00
Contributions (% Assets)	289886	3.64	13.23	0.00	0.00	0.00
Distributions ($M)	289886	2.55	25.45	0.03	0.35	1.29
Distributions (% Assets)	289886	6.87	7.91	4.39	5.00	6.08
Charitable Trust (%)	289886	30.72	46.13	0.00	0.00	100.00
Operating Foundation (%)	289886	2.24	14.81	0.00	0.00	0.00
Corporate Foundation (%)	289886	0.99	9.88	0.00	0.00	0.00
Panel B: Asset Allocation (%)						
Cash & Equivalents	289886	10.80	21.04	1.69	3.74	8.22
Government Bonds	289886	5.60	13.93	0.00	0.00	3.71
Corporate Bonds	289886	10.49	15.66	0.00	2.35	16.31
Equity	289886	55.41	32.54	31.36	61.24	82.82
Other Investments	289886	15.44	27.79	0.00	0.00	17.23
Inv. Land & Mortgages	289886	1.76	8.61	0.00	0.00	0.00
Other Assets	289886	0.50	1.79	0.00	0.00	0.04
Panel C: Investment Return and Fees (%)						
Net Investment Return	289886	7.79	12.06	1.00	7.76	14.08
Investment Fees	289886	0.69	0.66	0.22	0.57	0.98

Table 3: Asset Allocation Decision of Private Foundations

This table reports OLS regression coefficients and standard errors for the relationship between asset allocation decisions and private foundation characteristics. The dependent variable is the share of assets allocated to the specified asset class within each model. Independent variables include the logarithm of foundation total investment assets at the start of the year, investment fees, contribution rates (as a fraction of total adjusted assets), distribution rates (as a fraction of total adjusted assets), the logarithm of foundation age, the logarithm of one plus the number of paid staff over $50,000, the logarithm of one plus the number of unpaid staff members, their missing indicators (untabulated), and indicators for whether the foundation is a charitable trust, operating foundation, or corporate foundation. The Internet Appendix provides detailed variable and data descriptions. All continuous independent variables are winsorized at the 1% level in both tails. Year and NTEE-10 fixed effects are included, and standard errors are adjusted for double clustering by foundation organization and fiscal year. ***, **, * correspond to statistical significance at the 1%, 5%, and 10% level, respectively.

	Cash	Gov. Bonds	Corp. Bonds	Equity	Other Inv.
	(1)	(2)	(3)	(4)	(5)
Log(Inv. Assets)	-3.21***	0.31***	0.11*	1.42***	0.98***
	[0.15]	[0.08]	[0.06]	[0.16]	[0.12]
Investment Fees	-3.11***	-0.70***	0.13	-1.68***	2.39***
	[0.18]	[0.10]	[0.14]	[0.33]	[0.27]
Contributions (% Assets)	0.24***	-0.03***	-0.06***	-0.17***	0.00
	[0.01]	[0.00]	[0.00]	[0.02]	[0.01]
Distributions (% Assets)	0.55***	-0.02*	-0.05***	-0.41***	-0.06***
	[0.02]	[0.01]	[0.01]	[0.02]	[0.02]
Log(Age)	-0.90***	0.25***	0.16	1.20***	-0.71***
	[0.13]	[0.08]	[0.12]	[0.26]	[0.20]
Log(Paid)	3.32***	-1.39***	-1.63***	-10.58***	9.62***
	[0.42]	[0.38]	[0.37]	[1.47]	[1.40]
Log(Unpaid)	1.83***	-0.18	-1.18***	-2.02***	1.70***
	[0.15]	[0.11]	[0.13]	[0.28]	[0.24]
$\mathbb{I}$(Charitable Trust)	-11.43***	-0.40	2.79***	8.47***	1.22
	[0.81]	[0.38]	[0.54]	[0.97]	[0.83]
$\mathbb{I}$(Operating)	4.56***	-0.56	-1.37**	-9.76***	1.00
	[0.94]	[0.53]	[0.51]	[1.22]	[1.20]
$\mathbb{I}$(Corporate)	1.80	0.03	0.65	1.21	-2.98**
	[1.13]	[0.63]	[0.74]	[1.75]	[1.41]
Year Fixed Effects	Yes	Yes	Yes	Yes	Yes
NTEE Fixed Effects	Yes	Yes	Yes	Yes	Yes
Controls	Yes	Yes	Yes	Yes	Yes
Adj. R^2	0.26	0.10	0.03	0.06	0.04
Observations	289886	289886	289886	289886	289886

Table 4: Reach for Yield of Private Foundations

This table reports OLS regression coefficients and standard errors for the relationship between the share of assets allocated to equity, other investments, or government bonds, interest rates, and private foundation characteristics. The dependent variable is the share of assets allocated to the specified asset class within each model. The interest rate used is the 10-Year Treasury Constant Maturity Rate at the end of the previous year. Independent variables include the logarithm of foundation total investment assets at the start of the year, investment fees, contribution rates (as a fraction of total adjusted assets), the logarithm of foundation age, the logarithm of one plus the number of paid staff over $50,000, the logarithm of one plus the number of unpaid staff members, their missing indicators (untabulated), and the lagged dependent variable. QD_{t-1} represents the ratio of qualified distributions to the distributable amount based on the 5% minimum spending rule, after all IRS-required adjustments. The Internet Appendix provides detailed variable and data descriptions. All continuous independent variables are winsorized at the 1% level in both tails. Fund fixed effects are included, and standard errors are adjusted for double clustering by foundation organization and fiscal year. ***, **, * correspond to statistical significance at the 1%, 5%, and 10% level, respectively.

	Equity		Other Inv.		Gvt. Bonds	
	(1)	(2)	(3)	(4)	(5)	(6)
Panel A: Reach for Yield and Minimum Spending Rule						
$Yield_{t-1}$	-0.69***	-0.75***	-0.55***	-0.59***	0.81***	0.85***
	[0.18]	[0.18]	[0.12]	[0.12]	[0.06]	[0.06]
QD_{t-1}		-0.00***		-0.00**		0.00***
		[0.00]		[0.00]		[0.00]
$Yield_{t-1} \times QD_{t-1}$		0.04**		0.03***		-0.03***
		[0.01]		[0.01]		[0.01]
Other Controls	Yes	Yes	Yes	Yes	Yes	Yes
Fund Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Adj. R^2	0.73	0.73	0.70	0.70	0.70	0.70
Observations	277483	277483	277483	277483	277483	277483
Panel B: Reach for Yield by Large versus Small Foundations						
	$\geq$ 50M	$<$ 50M	$\geq$ 50M	$<$ 50M	$\geq$ 50M	$<$ 50M
$Yield_{t-1}$	0.28	-1.10***	-1.43***	-0.28**	0.84***	0.86***
	[0.20]	[0.19]	[0.14]	[0.12]	[0.07]	[0.06]
QD_{t-1}	-0.00	-0.00***	-0.00**	-0.00	0.00*	0.00***
	[0.00]	[0.00]	[0.00]	[0.00]	[0.00]	[0.00]
$Yield_{t-1} \times QD_{t-1}$	0.01	0.05***	0.09**	0.02	-0.05	-0.03***
	[0.04]	[0.01]	[0.04]	[0.01]	[0.03]	[0.01]
Other Controls	Yes	Yes	Yes	Yes	Yes	Yes
Fund Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Adj. R^2	0.77	0.73	0.80	0.68	0.73	0.70
Observations	41494	235327	41494	235327	41494	235327

Table 5: Risk-Adjusted Returns of Private Foundations

This table reports risk-adjusted alpha estimates for private foundations by size bucket and across all foundations. Panel A presents coefficients and bootstrapped p-values of foundations' risk-adjusted returns, showing the 10th, 25th, 50th, 75th, and 90th percentiles, as well as the equal-weighted ($\bar{\alpha}^{EW}$) and value-weighted ($\bar{\alpha}^{VW}$) averages. Estimates are based on a four-factor model for foundations with at least seven years of valid returns data, with bootstrapped p-values calculated according to Kosowski et al. (2006). Size groups are defined by each foundation's average inflation-adjusted fair value of total investment assets at the start of the year: Very large (AUM > \$500 million), large (\$250–\$500 million), medium-large (\$50–\$250 million), medium-small (\$10–\$50 million), small (\$1–\$10 million), and tiny (AUM < \$1 million). Factors include excess returns of U.S. equity (Russell 3000), U.S. corporate bonds (Bloomberg U.S. Aggregate Bond), international equity (MSCI ACWI ex-U.S.), and hedge funds (HFRI Fund-Weighted Composite).

	All	V-Large	Large	M-Large	M-Small	Small	Tiny
	Kosowski et al. (2006) Bootstrap Method						
Percentile							
10^{th}	-4.00***	-2.33	-2.29	-3.39**	-3.92***	-3.92***	-4.26***
	(0.00)	(0.87)	(0.78)	(0.02)	(0.00)	(0.00)	(0.00)
25^{th}	-2.38***	-0.89	-1.19	-1.55***	-1.95***	-2.44***	-2.79***
	(0.00)	(0.90)	(0.17)	(0.00)	(0.00)	(0.00)	(0.00)
Median	-1.07***	0.75***	-0.01	-0.23***	-0.51***	-1.24***	-1.76***
	(0.00)	(0.00)	(0.46)	(0.00)	(0.00)	(0.00)	(0.00)
75^{th}	0.61	2.59***	2.19***	2.08***	1.48***	0.29	-0.59***
	(1.00)	(0.00)	(0.00)	(0.00)	(0.00)	(1.00)	(0.00)
90^{th}	3.59***	4.95***	5.11***	5.93***	4.98***	2.92***	0.95
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(1.00)
$\bar{\alpha}^{EW}$	-0.48***	1.06***	0.88***	0.87***	0.12**	-0.80***	-1.52***
	(0.00)	(0.00)	(0.00)	(0.00)	(0.02)	(0.00)	(0.00)
$\bar{\alpha}^{VW}$	1.17***	1.94***	0.79***	0.92***	0.16***	-0.63***	-1.42***
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)

Table 6: Risk-Adjusted Returns of Private Foundations: Subsamples

This table reports risk-adjusted alpha estimates for private foundations by size bucket and across all foundations. Median, equal-weighted ($\bar{\alpha}^{EW}$), and value-weighted ($\bar{\alpha}^{VW}$) alphas are estimated using a four-factor model for each foundation with at least seven years of valid returns data. Bootstrapped p-values are computed following the methodology of Kosowski et al. (2006). Panel A presents results for a sample that excludes concentrated foundations, defined as those with over 40% of assets invested in a single corporate stock in a given year. Panel B shows results for a sample excluding foundations with a significant allocation to other investment assets, defined as those with more than 20% of assets in other investments. Panel C reports results for non-equity concentrated foundations with a limited allocation to other investment assets. Size groups are defined by each foundation's average inflation-adjusted fair value of total investment assets at the start of the year: Very large (AUM > \$500 million), large (\$250–\$500 million), medium-large (\$50–\$250 million), medium-small (\$10–\$50 million), small (\$1–\$10 million), and tiny (AUM < \$1 million). Factors include excess returns of U.S. equity (Russell 3000), U.S. corporate bonds (Bloomberg U.S. Aggregate Bond), international equity (MSCI ACWI ex-U.S.), and hedge funds (HFRI Fund-Weighted Composite).

	All	V-Large	Large	M-Large	M-Small	Small	Tiny
Panel A: Exclude Concentrated Foundations							
Median	-1.08***	0.27**	-0.02	-0.26***	-0.51***	-1.24***	-1.76***
	(0.00)	(0.03)	(0.45)	(0.00)	(0.00)	(0.00)	(0.00)
$\bar{\alpha}^{EW}$	-0.50***	0.44**	0.71***	0.81***	0.12***	-0.80***	-1.52***
	(0.00)	(0.02)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
$\bar{\alpha}^{VW}$	0.93***	1.55***	0.72***	0.82***	0.15***	-0.63***	-1.42***
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Panel B: Exclude High Allocation to Other Investments							
Median	-1.02***	-0.09	-0.13	-0.36***	-0.55***	-1.17***	-1.66***
	(0.00)	(0.35)	(0.21)	(0.00)	(0.00)	(0.00)	(0.00)
$\bar{\alpha}^{EW}$	-0.47***	1.06***	0.72**	0.65***	0.11**	-0.77***	-1.35***
	(0.00)	(0.00)	(0.02)	(0.00)	(0.02)	(0.00)	(0.00)
$\bar{\alpha}^{VW}$	1.08***	2.24***	0.62**	0.63***	0.14**	-0.63***	-1.26***
	(0.00)	(0.00)	(0.05)	(0.00)	(0.01)	(0.00)	(0.00)
Panel C: Combined Effect							
Median	-1.03***	-0.37**	-0.13	-0.38***	-0.55***	-1.17***	-1.66***
	(0.00)	(0.05)	(0.19)	(0.00)	(0.00)	(0.00)	(0.00)
$\bar{\alpha}^{EW}$	-0.49***	-0.16	0.46**	0.54***	0.11**	-0.77***	-1.35***
	(0.00)	(0.30)	(0.07)	(0.00)	(0.03)	(0.00)	(0.00)
$\bar{\alpha}^{VW}$	0.68***	1.51**	0.53**	0.47***	0.13**	-0.63***	-1.26***
	(0.00)	(0.03)	(0.05)	(0.00)	(0.02)	(0.00)	(0.00)

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Table 7: Investment Performance and Characteristics of Private Foundations
This table reports OLS regression coefficients and standard errors for the relationship between a private foundation's investment performance measures and foundation characteristics. The dependent variable is either the foundation's net return or its Sharpe ratio, calculated over a four-year rolling window. Columns (1) and (2) include all private foundations, while columns (3) to (6) are limited to foundations with investment assets exceeding $250 million. Independent variables shown include the logarithm of foundation total investment assets, investment fees, the percentage of assets allocated to equity, other investments, corporate bonds, and government bonds. Other controls include the contribution rate, distribution rate, the logarithm of one plus the number of paid staff over $50,000, the logarithm of one plus the number of unpaid staff members, their missing indicators, the logarithm of foundation age, indicators for whether the foundation is a charitable trust, operating foundation, or corporate foundation. An indicator for whether the foundation is concentrated—defined as holding a single stock comprising over 40% of its portfolio—is also included. $\text{Return}^c_{t-1:t}$ represents the annual return of the concentrated stock during the current fiscal year (set to 0 for non-concentrated foundations), using stock return data from CRSP. The Internet Appendix provides detailed variable and data descriptions. All independent variables are measured at the end of the previous fiscal year, and all continuous independent variables are winsorized at the 1% level in both tails. Fiscal year and NTEE fixed effects are included, and standard errors are adjusted for double clustering at the foundation organization and fiscal year levels. ***, **, * correspond to statistical significance at the 1%, 5%, and 10% level, respectively.

	Full Sample		Sample > 250M			
	Net Return	SR	Net Return		SR	
	(1)	(2)	(3)	(4)	(5)	(6)
Concentrated			0.03***	-0.04***	0.02	-0.22*
			[0.00]	[0.01]	[0.09]	[0.13]
Concentrated × $\text{Return}^c_{t-1:t}$				0.50***		1.79***
				[0.05]		[0.32]
Log(Inv. Assets)	0.00***	0.03***	-0.01***	-0.01***	-0.03	-0.02
	[0.00]	[0.01]	[0.00]	[0.00]	[0.03]	[0.03]
Investment Fees	-0.47***	-7.22***	0.02	-0.08	-1.96	-2.29
	[0.10]	[1.41]	[0.25]	[0.26]	[3.12]	[3.16]
Equity	0.05***	0.18	0.05**	0.05**	0.12	0.12
	[0.02]	[0.15]	[0.02]	[0.02]	[0.14]	[0.14]
Other Inv.	0.04***	0.18	0.04**	0.04**	0.32*	0.31*
	[0.01]	[0.13]	[0.02]	[0.02]	[0.16]	[0.16]
Corporate Bonds	0.02**	0.28**	-0.02	-0.02	0.05	0.03
	[0.01]	[0.13]	[0.01]	[0.01]	[0.16]	[0.16]
Government Bonds	0.01*	0.31***	-0.01	-0.02	0.25	0.24
	[0.01]	[0.09]	[0.01]	[0.01]	[0.16]	[0.16]
Year Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
NTEE Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Other Controls	Yes	Yes	Yes	Yes	Yes	Yes
Adj. R^2	0.40	0.44	0.37	0.46	0.43	0.45
Observations	252795	190698	11188	11188	9049	9049

Table 8: LP Type and Fund Performance

This table reports private equity and venture capital return measures across different types of limited partners (LPs). Panel A summarizes commitment-level internal rate of returns (IRRs) by LP type, fund type (private equity versus venture capital), and by time period, with the time unit of observation being the fund vintage year. Panel B reports OLS regression coefficients and standard errors for the relationship between fund return measures and LP type. The dependent variable is the fund IRR as of Q2-2024. Independent variables include indicator variables indicating whether a commitment was made by the specified LP type, the natural logarithm of fund size, and the natural logarithm of the number of prior investments made by an LP before the current commitment. For brevity, other LP types are not reported. Public pension funds serve as the omitted category in the regressions. The Internet Appendix provides detailed variable and data descriptions. Vintage year by fund type, and LP country fixed effects are included. Risk controls include additional fixed effects for the fund's primary geography and industry focus. Standard errors are adjusted for clustering at the fund level. ***, **, * correspond to statistical significance at the 1%, 5%, and 10% level, respectively.

	Full: 1991-2018			**1991-1998**			**1999-2006**			**2007-2018**		
	All	PE	VC	All	PE	VC	All	PE	VC	All	PE	VC
Panel A: Average IRR by LP Type												
Advisors	13.5	14.5	10.1	21.2	11.0	46.7	9.7	14.1	-0.3	15.3	15.4	14.7
Corporate Pensions	14.5	14.0	15.9	23.9	13.0	49.5	9.6	12.2	3.5	15.8	15.7	16.3
Insurance Companies	13.9	14.1	12.9	18.2	13.5	33.1	9.9	11.8	3.1	15.7	15.8	15.5
Investment Firms	13.7	15.3	8.2	15.0	14.8	15.8	10.4	16.4	-2.1	15.4	14.9	17.6
Nonprofit Charities	12.5	13.2	11.1	16.6	8.7	32.6	7.3	11.2	1.9	16.0	15.1	17.8
Other Investors	14.0	14.3	12.9	21.0	18.7	27.4	9.9	13.2	-0.3	15.3	14.4	18.3
Private Foundations	14.2	14.1	14.6	26.8	13.5	55.2	9.1	11.7	4.1	15.8	15.6	16.4
Public Pension Funds	14.0	14.6	11.7	18.4	12.6	33.6	8.9	12.0	1.5	15.9	15.9	15.8
Universities	15.3	13.4	18.0	39.1	10.9	61.6	6.0	10.8	0.9	15.5	15.2	16.2
Overall	14.1	14.3	13.6	22.0	13.2	43.0	9.2	12.2	2.2	15.8	15.6	16.3
Panel B: Multivariate Regression of IRR on LP Type												
Universities	1.67*	-0.17	4.79**	13.89**	-1.51	26.39**	-0.07	0.24	-0.64	-0.13	-0.10	0.22
	[0.91]	[0.45]	[2.21]	[6.18]	[1.70]	[10.66]	[0.63]	[0.69]	[0.96]	[0.50]	[0.60]	[0.91]
Private Foundations	1.46***	0.51	4.03***	8.35***	1.55	17.97***	1.26*	0.42	2.47	0.31	0.37	0.36
	[0.44]	[0.38]	[1.24]	[2.61]	[1.28]	[6.58]	[0.77]	[0.79]	[1.61]	[0.41]	[0.43]	[0.96]
Nonprofit Charities	0.73	0.10	2.37	0.31	-1.17	-0.87	0.95	0.90	0.55	0.34	-0.13	1.51
	[0.71]	[0.58]	[1.77]	[6.97]	[1.93]	[20.05]	[0.79]	[0.94]	[1.33]	[0.72]	[0.83]	[1.33]
Other LPs	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vintage × Fund Type	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
LP Country	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Risk Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Adj. R^2	0.23	0.18	0.27	0.25	0.30	0.22	0.19	0.20	0.02	0.14	0.16	0.12
Observations	55057	42044	13000	5728	4037	1689	19309	13534	5768	29996	24449	5534

Table 9: LP Type and Fund Performance by Size

This table reports OLS regression coefficients and standard errors for the relationship between measures of a fund return and the type of LP. The dependent variable is the fund IRR as of Q2-2024. Independent variables include indicator variables indicating whether a commitment was made by the specified LP type, the natural logarithm of fund size, and the natural logarithm of the number of prior investments made by an LP before the current commitment. Large private foundations have more than $500 millions in CPI-adjusted total assets, medium between $100 and $500 million, other below $100 million. For brevity, other LP types are not reported. Public pension funds serve as the omitted category in the regressions. The Internet Appendix provides detailed variable and data descriptions. Vintage year by fund type, and LP country fixed effects are included. Risk controls include additional fixed effects for the fund's primary geography and industry focus. Standard errors are adjusted for clustering at the fund level. ***, **, * correspond to statistical significance at the 1%, 5%, and 10% level, respectively.

	Full: 1991-2018			**1991-1998**			**1999-2006**			**2007-2018**		
	All	PE	VC	All	PE	VC	All	PE	VC	All	PE	VC
Universities	1.65*	-0.17	4.75**	13.83**	-1.51	26.30**	-0.12	0.21	-0.71	-0.13	-0.10	0.22
	[0.91]	[0.45]	[2.21]	[6.17]	[1.70]	[10.65]	[0.64]	[0.68]	[1.02]	[0.50]	[0.60]	[0.90]
Private Foundations$^{\text{Large}}$	2.09***	0.78*	4.95***	9.93***	1.30	19.75***	2.16*	1.18	3.43	0.35	0.43	0.36
	[0.64]	[0.44]	[1.74]	[3.36]	[1.22]	[7.53]	[1.18]	[0.89]	[2.82]	[0.46]	[0.52]	[1.02]
Private Foundations$^{\text{Medium}}$	0.74	0.00	2.95**	8.82***	2.99	25.05**	-0.44	-1.19	0.57	0.24	0.21	0.31
	[0.46]	[0.45]	[1.27]	[3.06]	[2.18]	[11.01]	[0.74]	[0.89]	[1.32]	[0.52]	[0.51]	[1.33]
Private Foundations$^{\text{Other}}$	0.92*	0.57	2.70*	3.30	1.06	3.77	0.84	0.49	1.24	0.32	0.44	0.43
	[0.48]	[0.50]	[1.40]	[2.81]	[2.25]	[6.94]	[0.83]	[1.02]	[1.70]	[0.54]	[0.54]	[1.35]
Nonprofit Charities	0.67	0.08	2.21	0.19	-1.15	-1.17	0.83	0.81	0.34	0.34	-0.14	1.52
	[0.71]	[0.58]	[1.80]	[6.98]	[1.93]	[20.09]	[0.82]	[0.95]	[1.48]	[0.72]	[0.83]	[1.33]
Other LPs	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vintage × Fund Type	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
LP Country	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Risk Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Adj. R^2	0.23	0.18	0.27	0.25	0.30	0.22	0.19	0.20	0.02	0.14	0.16	0.12
Observations	55057	42044	13000	5728	4037	1689	19309	13534	5768	29996	24449	5534

Table 10: LP Type and Fund Performance for First Time Funds

This table reports OLS regression coefficients and standard errors for the relationship between measures of a fund return and the type of LP for *First-Time* and *Other* funds. PitchBook defines *First-Time* funds as any first institutional fund raised by a GP. The dependent variable is the fund IRR as of Q2-2024. Independent variables include indicator variables indicating whether a commitment was made by the specified LP type, the natural logarithm of fund size, and the natural logarithm of the number of prior investments made by an LP before the current commitment. For brevity, other LP types are not reported. Public pension funds serve as the omitted category in the regressions. The Internet Appendix provides detailed variable and data descriptions. Vintage year by fund type, and LP country fixed effects are included. Risk controls include additional fixed effects for the fund's primary geography and industry focus. Standard errors are adjusted for clustering at the fund level. ***, **, * correspond to statistical significance at the 1%, 5%, and 10% level, respectively.

	First-Time Funds			**Other Funds**		
	1991–1998	1999–2006	2007–2018	1991–1998	1999–2006	2007–2018
Universities	2.93	1.43	-0.28	14.26**	-0.32	-0.10
	[5.29]	[1.73]	[2.37]	[6.70]	[0.66]	[0.51]
Private Foundations	4.32	1.62	0.64	8.49***	1.15	0.31
	[3.37]	[1.45]	[1.83]	[2.91]	[0.84]	[0.42]
Nonprofit Charities	13.82**	0.99	0.64	-0.36	0.83	0.16
	[6.28]	[1.90]	[3.36]	[7.52]	[0.85]	[0.75]
Other LPs	Yes	Yes	Yes	Yes	Yes	Yes
Vintage $\times$ Fund Type	Yes	Yes	Yes	Yes	Yes	Yes
LP Country	Yes	Yes	Yes	Yes	Yes	Yes
Risk Controls	Yes	Yes	Yes	Yes	Yes	Yes
Adj. R^2	0.42	0.39	0.26	0.26	0.19	0.14
Observations	754	1897	1238	4968	17404	28749

Table 11: Investment Performance and Capital Preservation

This table reports portfolio weights, the distribution of real investment paths for four portfolio scenarios based on 1,000 simulations over various horizons (h), and optimal spending rates under different rates of time preference (δ). Panel A shows the asset allocation across the four portfolios, along with each portfolio's mean return and standard deviation. Panel B summarizes percentiles of real wealth after h years, with each portfolio starting the simulation with one dollar of real principal. Real principal values are computed by adjusting for a required 5% distribution and inflation, which is subtracted from the portfolio's nominal return. Inflation and returns are bootstrapped simultaneously. $\mathbb{E}(W_T)$ represents the average foundation's real asset balance at the end of the horizon, while $\mathbb{P}(W_T < 1)$ denotes the proportion of foundations ending the period with a real principal value below 1. Panel C summarizes the optimal spending rule that maximizes CRRA utility (with $\gamma = 4$) across various values of δ, horizons h, and portfolios.

	I	II	III	IV
Panel A: Portfolio Weights				
Global Bonds	1.00	0.40	-	0.10
Domestic Equity	-	0.30	0.50	0.20
Intl. Equity	-	0.30	0.50	0.20
Hedge Funds	-	-	-	0.20
Private Equity	-	-	-	0.20
Real Estate	-	-	-	0.05
Commodities	-	-	-	0.05
Average Return (%)	5.70	8.51	10.36	11.37
Standard Deviation (%)	6.22	11.36	17.33	16.26

	I		II		III		IV	
	$h = 25$	100	$h = 25$	100	$h = 25$	100	$h = 25$	100
Panel B: Real Wealth at $s^* = 5\%$								
5^{th}	0.39	0.06	0.47	0.27	0.33	0.27	0.68	1.56
25^{th}	0.51	0.10	0.76	0.75	0.79	1.21	1.23	4.94
50^{th}	0.63	0.15	1.13	1.53	1.42	3.87	1.93	12.44
75^{th}	0.77	0.23	1.61	3.00	2.44	12.21	3.03	32.92
95^{th}	1.04	0.42	2.61	8.16	5.04	46.69	5.70	125.12
$\mathbb{E}(W_T)$	0.66	0.19	1.27	2.60	1.90	15.06	2.39	31.62
$\mathbb{P}(W_T < 1)$	0.93	1.00	0.42	0.34	0.35	0.21	0.17	0.03
Panel C: Optimal Spending Rule (s^* %)								
$\delta = 0.90$	7.00	4.50	7.50	5.90	7.70	4.40	8.10	6.40
$\delta = 0.92$	7.20	4.20	7.10	5.10	7.20	4.70	7.40	5.70
$\delta = 0.94$	6.70	3.60	7.30	4.70	6.30	3.80	7.40	5.10
$\delta = 0.96$	7.00	3.30	6.50	4.00	6.30	3.70	6.70	5.30

Appendix

Table A.1:

Audited Financial Statements (AFS) vs Form 990-PF Returns for Top Foundations

This table compares the net investment return of private foundations as calculated using their audited financial statements (AFS) with returns calculated from Form 990-PF. It includes 31 of the largest private foundations, measured by total fair value of assets, with publicly available audited financial statements from 2008 and 2019. Total assets are shown in millions of dollars, while the audited and 990-PF columns display each foundation's net investment return in percentage points. For simplicity, adjustments for the timing of contributions and distributions are not made. Foundations with a fiscal year ending other than 12/31 are marked with †. Audited financial statements for 2008 were not retrievable for six foundations.

Name	Assets ($B)	2008		2019	
		AFS	990-PF	AFS	990-PF
Bill & Melinda Gates Fdn.	49.94	-19.82	-19.96	10.90	11.66
Lilly Endowment	16.99	-21.50	-21.40	16.19	16.00
Ford Fdn.†	14.25	-14.26	-14.20	13.31	13.27
Robert Wood Johnson Fdn.	11.92	-23.59	-24.08	11.73	12.10
William & Flora Hewlett Fdn.	10.96	-27.67	-27.29	16.46	16.46
David And Lucile Packard Fdn.	7.97	-25.09	-25.27	13.72	13.65
WK Kellogg Fdn. Trust†	7.42	0.08	0.06	-5.26	-5.21
John D. And Catherine T. Macarthur	7.21	-	-	15.90	15.98
Gordon E. And Betty I. Moore Fdn.	7.17	-25.62	-25.65	16.24	16.23
Andrew W. Mellon Fdn.	6.99	-25.54	-25.54	12.69	12.46
Rockefeller Fdn.	4.93	-24.93	-25.81	16.07	16.04
Conrad N. Hilton Fdn.	4.10	-	-	24.56	25.00
Simons Fdn.	4.02	-	-	20.67	20.89
Duke Endowment	3.90	-29.58	-30.27	12.98	12.70
Kresge Fdn.	3.84	-20.57	-20.64	7.91	7.83
California Endowment†	3.81	-28.92	-28.91	4.81	4.82
Carnegie Corporation Of New York†	3.44	-9.36	-9.39	1.35	1.77
Charles Stewart Mott Fdn.	3.20	-25.11	-25.60	11.30	11.40
Margaret A. Cargill Fdn.	3.19	-	-	13.05	12.88
Annie E. Casey Fdn.	2.89	-26.19	-25.87	16.74	16.58
Richard King Mellon Fdn.	2.86	-28.93	-28.79	21.26	21.30
Ewing Marion Kauffman Fdn.	2.66	-34.34	-34.30	21.12	21.14
James Irvine Fdn.	2.61	-27.43	-28.06	17.45	17.35
Mcknight Fdn.	2.55	-27.86	-27.72	16.34	15.88
John S. And James L. Knight Fdn.	2.28	-23.69	-23.67	14.88	14.81
Barr Fdn.	2.10	-	-	20.40	20.35
Alfred P. Sloan Fdn.	1.95	-22.05	-22.59	16.75	16.65
Doris Duke Charitable Fdn.	1.93	-26.98	-26.92	14.98	14.93
Moody Fdn.	1.80	-26.95	-26.91	6.29	6.47
Annenberg Fdn.	1.47	-	-	18.42	18.41
Henry Luce Fdn.	0.93	-26.58	-26.42	17.34	17.51
Average	6.49	-23.70	-23.81	14.08	14.11
Median	3.81	-25.54	-25.65	15.90	15.88

Table A.2: Disclosed Returns vs Form 990-PF Returns for Top Foundations

This table compares actual disclosed returns with those calculated from Form 990-PF for a sample of private foundations that provide return data. Disclosed returns are obtained from annual reports or foundation websites and supplemented by the Internet Archive for earlier reports when necessary. The table presents the average return ($\bar{R}$) over the available years, the return standard deviation (σ), risk-adjusted returns (α) using the four-factor model from Table 5, and the correlation (ρ) between the two return series. Foundations that disclose gross returns are marked with ‡. Foundations that disclose returns based on unaudited financial statements (i.e., unaudited valuations of illiquid assets) are denoted with †.

Name	Period	$\bar{R}$		σ		α		ρ
		Actual	SOI	Actual	SOI	Actual	SOI	
Rockefeller Foundation[‡]	1991-2007	11.1	10.6	10.5	10.5	1.8	1.3	99.8
Robert Wood Johnson Foundation	2001-2004; 2006-2009	5.5	5.2	13.7	13.7	0.0	-0.9	99.9
MacArthur Foundation	1999-2020	9.3	9.0	11.7	11.2	3.3	3.2	99.5
Duke Endowment[†]	2003-2020	9.8	10.4	9.4	11.9	4.5	2.0	95.2
Ford Foundation	1992-2012; 2017-2019	9.5	9.1	12.4	12.2	2.2	2.0	99.9
Carnegie Corp. of New York	1998-2001; 2003; 2005-2020	10.8	10.6	9.3	9.2	3.3	3.1	99.9
Kresge Foundation	2006-2009; 2012-2015	8.6	8.8	10.5	12.3	5.1	4.5	94.7
Commonwealth Fund	2003-2012; 2014-2018	8.1	7.6	11.4	10.7	-0.4	-0.4	99.2
Average		**9.1**	**8.9**	**11.1**	**11.5**	**2.5**	**1.8**	**98.5**

Internet Appendix

IA.1 Data and Performance Measurement

The first section provides details about the data used in the paper, the cleaning and filtering procedures, and the implications of these choices on the quality of the data and empirical results. The second section includes a detailed description of our baseline investment performance measure, as well as alternative measurement methodologies and the rationale behind the choices made in our paper and the implications for our results.

IA.1.1 IRS SOI 990-PF

Our data is sourced from the microdata files for all Forms 990-PF, the tax returns of private foundations, harmonized using annual SOI studies. The sample includes all foundations with assets greater than $10 million, as well as a subset of foundations below this threshold, selected based on their total assets using stratified random sampling. The IRS SOI makes this data available in ASCII flat files or Extensible Markup Language (XML) format. We downloaded the available data files for the 1985–2020 tax years, focusing on the 1990–2020 period, as detailed information on investment assets (including asset class breakdowns and total amounts) is available only from tax year 1990 onwards. These variables are essential for our asset allocation and performance analysis.

The raw data contains 333,947 U.S. foundation-year observations, with non-missing lagged total assets and investment assets necessary to compute investment gains or losses and net investment returns. Below, we describe the filtering methodology used in this paper. The objective of this procedure is to obtain the cleanest data possible for estimating rates of return that are not influenced by non-investment-related activities. We acknowledge that alternative samples could be employed, and we provide a comprehensive description of robustness tests at the end of this section.

Filter 1. We exclude foundation-year observations where less than 85% of total assets are designated as investments, savings, and cash equivalents. While this threshold is admittedly arbitrary, it allows us to focus on private foundations that actively invest the majority of their assets in financial securities, both marketable and non-marketable. This filter effectively removes foundations with a significant portion of their assets designated as non-investment, such as art, paintings, collectibles, mineral rights, program-related investments (PRI), receivables, and land. Without this filter, we would capture the fictitious returns of foundations that seldom mark-to-market highly illiquid assets (especially art, collectibles, and land). As an example, the Norton Simon Foundation (EIN: 95-6035908) had about 92% of its assets classified as "other assets," and specifically as a collection of art (which it loans to other nonprofits) in fiscal year 2019. This process leaves us with 299,964 foundation-year observations.

Filter 2. We exclude foundation-year observations where the beginning-of-year total assets are equal to the end-of-year total assets, where total assets are zero, or where non-zero beginning-of-year investment assets are equal to end-of-year investment assets. For example, the Zoom Foundation (EIN: 06-1600601) had total assets of $999,999,999 for the 2017–2020 tax years. This filtering process results in a dataset of 299,233 foundation-year observations.

Filter 3. We exclude foundation-year observations with negative net asset values, as these foundations have liabilities exceeding their assets, often in the form of loans from trustees or disqualified persons to the foundation. For example, the Marcus Foundation (EIN: 58-1815651), which had assets of about $100 million, reported approximately $344 million in liabilities in fiscal year 2019. After applying this filter, we are left with 298,792 foundation-year observations.

Filter 4. We exclude foundation-year observations with obvious clerical errors where (1) the discrepancy between the sum of the individual components of balance sheet assets and total assets exceeds 0.5% of total assets, and (2) the discrepancy between assets minus liabilities and net assets exceeds 0.5% of total assets. This filtering process results in a dataset of 298,781 foundation-year observations.

Filter 5. We exclude foundation-year observations where the foundation terminates its 501(c)(3) private foundation status under IRC 507(b)(1)(B), or is subject to liquidation, dissolution, termination, or substantial contraction. This includes any partial liquidation or disposition of assets unrelated to normal operations. For instance, the Cummings Foundation (EIN: 04-3073023) transferred $218,798,000 in assets to OneWorld Boston in 2017, as part of a broader strategy to establish an endowment under IRC 507(b)(2). These asset distributions were part of a series of related transactions that started in 2012 to significantly reallocate the Cummings Foundation's assets to OneWorld Boston. Note that this specific example would also fall under the following filter, given the parental relationship between the Cummings Foundation and OneWorld Boston. After applying this filter, we are left with 297,604 foundation-year observations.

Filter 6. We exclude foundation-year observations if, at any point during the tax year, the foundation directly or indirectly held a substantial interest in another entity (i.e., controlled entities). This criterion is based on Part VII, line 11 of Form 990-PF. After identifying these foundation-years, we manually review the reasons for the direct or indirect controlling interest, flagging those that involve "parental" relationships among foundations, significant transfers associated with controlling interests, or large controlling stakes in a single entity. A purely automated filtering based on the IRS flag would mistakenly exclude foundations holding controlling interests in a fund due to their limited partnership position. Examples include foundations that hold controlling stakes in hedge funds, such as the Steven & Alexandra Cohen Foundation investment in Point72 (EIN: 06-1627638). As an example of parental relationship among foundations, the Pritzker Foundation (EIN: 36-6058062) holds assets in the Pritzker Family Foundation (EIN: 30-0039820) for about $81 million in tax year 2020. Note that the IRS specifically began collecting data about controlling interests starting in 2006. Therefore, for the preceding years, we backfilled the observations, assuming that a foundation holding a controlling interest in 2006 also did so in prior years. We acknowledge that this procedure may not capture foundations that had controlling interests between 1991 and 2005 but ceased to exist by 2006. This filtering step results in a dataset of 297,195 foundation-year observations.

Filter 7. We exclude foundation-year observations that operate in the art industry based on their NTEE 12 industry classification code. For instance, the Kimberly Art Foundation owns and operates the Kimberly Art Foundation in Fort Worth, Texas (EIN: 75-6036226). As expected, the foundation holds the majority of its assets in paintings and sculptures, which are considered investment assets by the SOI division of the IRS. However, these paintings are classified as "other assets" by the foundation on its Form 990PF. This filter complements Filter 1. After applying this filter, we are left with 294,014 foundation-year observations.

IA.1.2 Net Investment Performance

Private foundations often do not disclose their investment performance to the public. Therefore, we provide an approximate net return using publicly available information from IRS filings. Specifically, we estimate the growth in assets unrelated to charitable activities—such as contributions to and distributions from the foundation—using the following equation:

$$R_{i,t} = \frac{\Delta\mathrm{NA}_{i,t} - \mathrm{Contr.}_{i,t} + \mathrm{Distr.}_{i,t} - \mathrm{Inv.\ Fees}_{i,t} - \mathrm{Taxes}_{i,t}}{\mathrm{Inv.\ Assets}_{i,t-1} + \tau_c \times \mathrm{Contr.}_{i,t} - \tau_d \times \mathrm{Distr.}_{i,t}} \tag{IA.1}$$

where $\Delta\mathrm{NA}_{i,t}$ denotes the annual change in net assets (fair market value of total assets minus liabilities) for private foundation i at time t. $\mathrm{Contr.}_{it}$ represents the total contributions, gifts, and grants received as inflows, while $\mathrm{Distr.}_{it}$ captures distributions made to charitable purposes and expenses (including operating, administrative, and investment-related expenses) which collectively count towards the 5% spending rule as outflows from the foundation.[48] We further subtract disclosed investment fees and current excise taxes (which are included in $\mathrm{Distr.}_{it}$) because they represent investment-related expenses. To estimate net returns, we divide by the beginning-of-year investment assets, adjusted for the timing of inflows and outflows, following Dahiya and Yermack (2021), with $\tau_c, \tau_d = 0.5$ (half-year). Note that we include cash and savings in the denominator to adopt a conservative approach when estimating returns, and we condition on a positive denominator and fiscal-year length of 12 months. To calculate our final return measure, we trim observations at the bottom and top 0.5%. This approach effectively excludes foundations with returns below -40% (1464 observations) and above 80% (1464 observations). While some of the trimmed observations could be instances where our methodology fails to perform well, spot checks for the largest group of foundations include returns that would be correct if included, although extreme. For instance, Rippleworks Inc. achieved a 726% return in 2018 and a 192% return in 2021, with 100% of its assets held in cryptocurrency XRP. Our findings remain robust across alternative trimming methodologies, such as trimming the bottom and top 0.1% of the distribution or adjusting returns annually based on the bottom and top 10% of performers in the CRSP dataset. The final dataset consists of 289,886 foundation-year observations.

[48] We subtract $\mathrm{Contr.}_{i,t}$ in the numerator to remove its mechanical, positive impact on investment assets and add back $\mathrm{Distr.}_{it}$ to remove its mechanical, negative impact. $\Delta\mathrm{NA}_{i,t}$ is added as increases correspond to investment gains while declines in $\Delta\mathrm{NA}_{i,t}$ correspond to investment losses.

Below, we provide a detailed explanation of the steps taken to improve the return approximation, along with a comparison to audited financial statements and disclosed investment performance figures. We also discuss a series of robustness checks conducted to ensure that our conclusions remain robust.

IA.1.2.1 Non-investment Changes in Market Values

The numerator in Equation IA.1 estimates total investment earnings for the year by excluding changes in net assets unrelated to investment activities. Alternatively, investment gains and losses can be estimated using a sum-of-the-parts (SOP) approach, which adds dividends and interest income, net realized gains/losses, and net unrealized gains/losses. The main issue with the SOI data is that unrealized gains, which often represent the largest share of total net return, are not disclosed and this would severely bias SOP-based return estimates. Section IA.1.2.5 provides additional details and a comparison between our paper and the SOP methodology. In any case, there are a few instances that may bias (both upward and downward) our return measure.

Mergers and Transfers: Mergers between private foundations are rare. However, when they do occur, the entirety of a foundation's assets is typically transferred to another foundation. This transfer of assets is not recorded as a contribution or a distribution, leading to potential biases in our return estimates. Specifically, we might observe an upward bias in the return for the receiving foundation and a downward bias for the transferring foundation, as the asset transfer would be embedded within unrealized gains and losses. For example, The Wallace Foundation reported total net assets of $1,227.6 million in 2003 and $621 million in 2002. After adjusting for distributions of $53.4 million and contributions of $176,199, the estimated investment gain or loss would amount to $659.8 million, representing a 102% return over the year (based on $645.7 million in assets at the beginning of 2002, and no cash flow adjustment for simplicity). However, the foundation received $474.2 million in assets as a result of a merger, which is included in the change in net assets. By excluding the impact of this asset transfer, the return is estimated to be ($659.8 million - $474.2 million)/$645.7 million = 28.7%.

We address this data issue through several steps. First, as previously mentioned, we exclude foundation-year observations where a foundation terminates its status under IRC

507(b)(1)(B) or undergoes liquidation, dissolution, termination, or substantial contraction. This exclusion covers any partial liquidation or disposition of assets unrelated to normal operations, such as when a foundation transfers its assets to another foundation and ceases to exist.

Second, to correct for the opposite bias (i.e., foundations that receive net assets), we manually review all instances where private foundations change their names as flagged by the IRS, which may be indicative of a merger or significant asset transfer. From 643 cases, we identified 23 instances involving asset transfers or mergers. For these cases, we adjust our return methodology to exclude market value changes unrelated to investment activities. The Wallace Foundation case described earlier is captured due to a name change associated with the merger. It is important to note that our corrections are limited to returns post-2001, as PDFs of Forms 990-PF are not available for earlier years.

Third, mergers or large asset transfers often result in the creation of a new entity. Due to the reliance on lagged investment asset data to compute investment returns, the initial return observation, which may be spurious due to the asset transfer/merger, would be omitted.

Fourth, since not all mergers are accompanied by a name change, we also scrape the XML forms from ProPublica, including the corresponding schedule attachments where other increases and decreases are recorded for tax years 2013-2020. We successfully scraped 174,756 foundation-year-item XML filings, identifying 1,033 instances of asset transfers to and from foundations, cases of mergers, and bequests using the text description accompanying the item dollar amount. After merging this data with our IRS SOI dataset, the number of these events decreases to 505. This reduction is due to two factors: conditioning on foundations with investment assets in the prior year and the XML data containing many smaller foundations with assets under $10 million. We then adjust our return calculations to account for the impact of transfers, mergers, and bequests. The original return measure and the corrected measure have a correlation of 99.9%. We also account for two notable mergers that occurred in 2009. The first involved the Conrad N. Hilton Foundation and the Conrad N. Hilton Fund, resulting in an asset transfer of $759,148,722, after which the fund ceased to exist. The second instance was the merger of the Arnold Family Foundation with the Laura and John Arnold Foundation, involving an asset transfer of $263,241,764, leading to the dissolution of the Family Foundation.

Finally, as described in the filtering methodology above, we drop all foundations that directly or indirectly hold, at any time during the tax year, a substantial interest in another entity (i.e., controlled entities). These foundations often transfer assets in and out of the corpus.

Other Changes: There are additional changes in net assets that should not be included in our return methodology because they are related to non-operating activities and do not have an equivalent entry in the income statement. These include changes in the value of non-deductible pension and post-retirement benefit obligations and costs, changes in grants payable (e.g., prior-year grant rescissions), and changes in the provision for potential losses or gains on program-related investments (PRIs). Identifying these changes by manually reviewing over 290,000 PDFs is impractical. However, spot checks suggest that these changes are typically small and would likely have a minimal effect on our estimations.

IA.1.2.2 Investment Fees

Most foundations actively invest in both marketable and non-marketable securities and incur a combination of internal and external investment management expenses. The IRS SOI data captures these costs in several ways. Our baseline measure of investment fees relies on the amount reported in Part I, Line 26, Column (b) of Form 990-PF, which reflects total expenses incurred in the production of net investment income. This figure includes all related administrative and operating expenses—such as officer compensation, accounting, legal, and other professional fees. Importantly, this column is used to calculate the foundation's federal excise tax.

Some foundations also include investment-related fees—particularly those associated with non-marketable investments such as private equity funds (e.g., management fees)—in Part I, Line 23, Column (b). These are sometimes known and thus reported by some foundations because they reduce accounting net investment income and, in turn, lower excise tax. However, these fees are often already netted out of reported asset values (e.g., as part of the NAV for LP fund interests), and thus appear only indirectly in the financial statements. As a result, total investment expenses in Column (b) can significantly exceed the amounts implied by comparing expenses reported in Column (a) (total expenses per books) and Column (d) (cash disbursements for charitable purposes).

Because Column (d) is reported on a cash basis and Column (b) might be reported on an accrual basis, the difference between Columns (a) and (d) does not always equal Column (b). Nonetheless, this difference provides a useful upper bound on fees actually paid. To avoid overstating investment expenses, we adopt a conservative rule: If reported investment expenses in Column (b) exceed the implied fees (Line 24, Column (a) minus Line 24, Column (d)) by 50% or more, we default to the implied approach as a more reasonable estimate. This correction is fairly rare and only happens in 2% of the observations. This refinement helps us better approximate true investment fees while avoiding significant overestimation.

As an example, in 2021, the Alfred P. Sloan Foundation reported $24.6 million in investment fees in Column (b). This figure exceeded the implied fees of $9.8 million (Column (a) minus Column (d), $22.3 - $12.5 million) by a large margin. The discrepancy was driven by $16.8 million in LP-related fees included in Column (b) to calculate the excise tax. However, audited financial statements show that actual investment expenses totaled $9.7 million. Under our approach, we would estimate fees at $9.8 million, offering a more realistic approximation.

We also adjust net return calculations by subtracting current excise taxes (Line 18, Column (a)). In addition, foundations frequently adjust asset valuations at fiscal year-end for unrealized capital gains or losses. These adjustments often account for deferred federal excise tax liabilities or benefits, which are subtracted (or added) from reported unrealized gains or losses.

IA.1.2.3 Timing of Contributions

Fewer than 2 percent of observations report large donations, defined as exceeding 100 percent of beginning-of-year assets. Half of these occur within the first ten years following the foundation's tax-exempt status ruling date. Although rare, the timing of large contributions within the fiscal year can materially affect our return calculation by altering the denominator in Equation IA.1. For instance, if a contribution occurs at the beginning of the year and investment earnings are positive, our methodology might overestimate returns by underestimating the beginning-of-year investment assets. Conversely, if the contribution occurs at the end of the year, we could underestimate net returns by overestimating investment assets (compared to a baseline model with $\tau = \frac{1}{2}$).

There is no straightforward, systematic way to account for the exact timing of gifts and contributions. To address this, we show the robustness of our results by employing two approaches. First, we account for different timing scenarios throughout the year by varying the τ factor in our estimated returns in Equation 1, ranging from $\frac{1}{4}$ to $\frac{3}{4}$. In untabulated results, we show that the average (median) net returns are 7.86% (7.90%) and 7.73% (7.76%) for $\tau = \frac{1}{4}$ and $\tau = \frac{3}{4}$, respectively, all within plus/minus 10 basis points of the baseline case of $\tau = \frac{1}{2}$. Moreover, estimated risk-adjusted alphas are nearly identical across the two different timing assumptions compared with our baseline.

Second, we scrape the actual timing of noncash contributions from Schedule B of Form 990-PF and use these dates in place of τ_c when computing returns. If a foundation has multiple contributions within a tax year, we use the date of the largest gift. This process yields approximately 12,400 noncash gifts along with their receipt dates between 2013 and 2020. To improve the accuracy of return estimates for the largest foundations, we augment the scraped contribution data by manually collecting noncash gifts from the largest private foundations—those with over $250 million in assets—where gifts represented more than 5% of prior-year assets and were thus likely to impact our return estimates. Since XML data has been available only since 2013 (and not all private foundations file electronically), we manually collected noncash gift information for the 2001-2020 period from PDF filings available on ProPublica. In total, we reviewed an additional 1,099 foundation-year observations and retrieved the gift receipt dates, allowing us to adjust our return measure based on the exact timing of contributions. Our performance results remain robust and are slightly stronger, as shown in Panel A of Table IA.11 in the Internet Appendix. This is because, in practice, most gifts occur toward the end of the fiscal year, as shown in Figure IA.5. The timing of gifts is also consistent with prior findings by Yermack (2009). A majority of foundations have December fiscal year ends, which align with the deadline for claiming charitable deductions on tax returns. Individuals likely have stronger bequest motives at this time, and foundations orient their fundraising efforts around this pattern, which increases our measure of returns when properly accounting for the true timing of gifts.

One limitation of this analysis is that private foundations typically report only the receipt date for noncash gifts, such as donated stocks, but do not provide information on the timing of cash contributions, including person or payroll donations. From scraping the XML filings, we find that noncash contributions make up about 70% of contributions. Additionally, these gifts also tend to be larger in magnitude with the largest 29 gifts in our sample stemming from noncash contributions rather than cash.

IA.1.2.4 Comparison to Audited Financial Statements (AFS) and Disclosed Returns

As explained above, our return measure provides an approximation of the true investment returns of private foundations. Ideally, we would have access to each foundation's disclosed returns, which account for the exact timing of inflows and outflows, accurately reflect unrealized gains/losses, and include investment expenses. The best available comparison is between returns estimated using 990-PF SOI data and those calculated based on information disclosed in a foundation's AFS. An AFS offers an itemized disclosure of investment income, net realized gains/losses, and net unrealized gains/losses. It also provides the total amounts of direct investment expenses and excise taxes.

To compare estimated returns, we retrieved AFSs for the 31 largest private foundations for fiscal years 2008 and 2019. The year 2008 experienced large, negative returns, whereas 2019 coincided with a bull market. This comparison enables us to evaluate our estimated returns against those derived from AFSs during two distinct market scenarios, ensuring that our measure performs reliably in both contexts.

Table A.1 shows that the discrepancy between the returns estimated using the AFS and the 990-PF is minimal. For fiscal year 2008, the mean (median) annual return estimated using the AFS and 990-PF is -23.70% (-25.54%) and -23.81% (-25.65%), respectively. Similarly, for fiscal year 2019, the mean (median) annual return estimated using AFS and 990-PF is 14.08% (15.90%) and 14.11% (15.88%), respectively. The correlation between the two return series is high, at 99.89% in 2008 and 99.93% in 2019 (99.99% if aggregated). Furthermore, the 990-PF return measure underestimates the AFS return about half the time in 2008 and 2019, suggesting limited bias in our return calculation methodology. Finally, the correlation between the discrepancies in 2008 and 2019 is nearly zero, suggesting that our estimation procedure does not systematically overstate or understate a foundation's return over time.

For a limited number of foundations and years, we were able to find their actual disclosed returns from online sources, such as their websites or annual reports (e.g., the letter from the Chief Investment Officer). When necessary, we accessed prior versions of their websites using the Internet Archive through the Wayback Machine (https://web.archive.org/). Table A.2 provides summary statistics for the eight foundations for which we obtained return data. The average return across foundations and years is 9.1% for the actual returns and 8.9% for the estimated returns. The standard deviation of the estimated returns is slightly higher, at 11.5%, compared to 11.1% for the actual returns. The correlation between the two return series is high, at 98.5%. Additionally, the estimated alpha using our primary four-factor model is 1.8% for the estimated return series, compared to 2.5% for the actual disclosed returns. Overall, our estimated returns tend to exhibit slightly lower returns, higher volatility, and consequently, lower alpha.

IA.1.2.5 Flow-Based vs SOP-based Returns

While all private foundations report investments at fair market value (FMV) in column (c) of Form 990-PF, many report assets at book value in column (b). The IRS requires that changes in net assets unrelated to revenues and expenses (i.e., "other increases" and "other decreases") be reported based on the values in columns (a) and (b). When a foundation reports FMV in both columns (b) and (c), a common practice among larger, accrual-basis filers, these adjustments often reflect unrealized gains and losses on investment assets. In such cases, our flow-based return measure yields nearly identical estimates to the sum-of-the-parts (SOP) method, which adds dividends, interest income, net realized gains/losses, and net unrealized gains/losses. We provide a derivation below which walks through the intuition of when our flow-based return measure is identical to the SOP method which hinges on the treatment of unrealized gains and losses.

The evolution of endowment net assets can be described as follows:

$$\begin{aligned}\text{Net Assets}_{i,t} = \text{Net Assets}_{i,t-1} &+ \text{Contributions}_{i,t} - \text{Distributions}_{i,t} \\ &+ \text{Other Increases/Decreases}_{i,t} \end{aligned} \tag{IA.2}$$

where Net $\text{Assets}_{i,t}$ denotes total assets minus liabilities. $\text{Contributions}_{i,t}$ includes all inflows (both investment- and non-investment-related), while $\text{Distributions}_{i,t}$ includes all outflows. Other $\text{Increases/Decreases}_{i,t}$ is the net of other increases and other decreases (with decreases entering as negative values) which captures changes not explained by contributions or distributions, such as unrealized gains/losses when assets in column (b) are reported at fair market value.[49]

We next decompose $\text{Contributions}_{i,t}$ into investment- and non-investment-related compo-

[49] In constructing our sample, we took steps to minimize the influence of non-investment-related events such as inter-foundation transfers, bequests, and mergers.

nents:

$$\text{Net Assets}_{i,t} = \text{Net Assets}_{i,t-1} + \underbrace{\text{Charity Contr.}_{i,t} + \text{Realized Inv. Gains}_{i,t}}_{\text{Contributions}} - \text{Distributions}_{i,t} + \text{Other Increases/Decreases}_{i,t} \tag{IA.3}$$

Here, Charity Contr.$_{i,t}$ represents gifts, grants, and other non-investment contributions, while Realized Inv. Gains$_{i,t}$ includes net investment income (dividends, interest), realized gains/losses, and other income (e.g., LP distributions). Other Increases/Decreases$_{i,t}$ remains analogously defined.

Rearranging to isolate the SOP-based investment gain:

$$\underbrace{\text{Realized Inv. Gains}_{i,t} + \text{Other Increases/Decreases}_{i,t}}_{\text{SOP-based Investment Gain}} = \text{Net Assets}_{i,t} - \text{Net Assets}_{i,t-1} - \text{Charity Contr.}_{i,t} + \text{Distributions}_{i,t} \tag{IA.4}$$

Subtracting Investment Fees$_{i,t}$ and Taxes$_{i,t}$ yields a net-of-fees, after-tax investment return which corresponds to the flow-based approach shown in Equation (1) of the paper. Thus, the SOP and flow-based approaches are equivalent if and only if column (b) reports assets at fair market value, in which case unrealized gains/losses are embedded in Other Increases/Decreases$_{i,t}$ and captured as part of investment performance.

The accuracy of the SOP approach hinges on whether column (b) reflects FMV or book value. When column (b) uses FMV, SOP, and flow-based returns match closely. However, if book value is used, SOP returns understate (overstate) performance by omitting unrealized gains (losses) reported in Part III. Although the IRS does not disclose the valuation basis of column (b), the accounting method provides a proxy: 85% of foundations in our sample report using cash accounting and typically use book value; only 13% use accrual accounting and tend to report FMV.

To systematically assess when and why the two methods diverge, we analyze 36,348 observations from accrual-basis filers. Nearly half (48%) exhibit a mean absolute percentage error (MAPE) greater than 1% between SOP and flow-based returns. We are able to mechanically explain most of these discrepancies through four main channels: (1) clearly identified book value reporters (50%), (2) implausibly small "other increases" or "decreases" in the SOP components (34%), (3) transitions in accounting basis (6%), and (4) large holdings of illiquid assets reported at cost (2%). After applying these filters, 1,280 observations remain where discrepancies cannot be easily explained.

In this residual sample for example, SOP returns tend to significantly understate performance during market downturns. For example, in 2008 the median SOP return was -0.1%, compared to -22.0% using the flow-based approach. These gaps highlight the limitations of the SOP method when column (b) mixes FMV and book values.

As a robustness check, we construct a hybrid return measure that adjusts for asset categories likely reported at FMV versus book value (Table IA.12), further validating the accuracy of our flow-based approach.

Finally, we note that even for the cash-based foundations listed in Table A.1 (the Lilly Endowment, Annie E. Casey Foundation, Richard King Mellon Foundation, Ewing Marion Kauffman Foundation, and Moody Foundation) our estimated returns closely match those derived from the audited financial statements, which are prepared using an accrual basis of accounting.

IA.1.3 Asset Allocation

To study the asset allocation of private foundations, we use asset classification totals from the IRS SOI harmonized microdata based on 990-PF filings. These data are processed and verified by IRS SOI staff following standardized procedures, rather than relying directly on the self-reported line items submitted by private foundations in the raw 990-PF filings. While there is no incentive for private foundations to misreport the composition of their investment holdings across line items, IRS data entry specialists are trained by IRS economists and follow a detailed classification manual to ensure consistent treatment of asset types across filers and over time.[50] Reclassification efforts primarily involve reallocating assets originally reported under "Investments–Other" (Part II, Line 13; hereafter "Other Investments") and "Other assets" (Part II, Line 15) into more precise categories when appropriate. Assets are less frequently moved across other line items in Schedule II.

[50] The classification manual maps specific asset descriptors from Form 990-PF to corresponding asset categories.

Asset classification is based on the nature of traded security rather than the underlying asset. For example, asset-backed securities are reported under “Other Investments” (Part II, Line 13), while direct mortgage holdings appear under “Investments–Mortgage Loans” (Part II, Line 12). When foundations aggregate multiple holdings under headings like “Asset-backed securities,” data entry specialists might review underlying documents to reclassify assets more precisely. Most reclassifications occur from “Investments–Other” and “Other Assets” into more specific categories; assets are less commonly moved between other line items. Reclassifications are performed manually without assistance from any automated text-based methods.

IA.1.3.1 Comparing Asset Reclassification Totals

Our comparison of SOI harmonized microdata asset classification totals with raw 990-PF filing suggests that in about 35% of foundation-year observations, the SOI data entry specialists reallocate assets from “Investments–Other” into more precise categories (predominantly “Equity”). Across these filings, the SOI harmonized microdata modifies reported foundation-year asset totals in 39% of cases for “Equity”, 35% for “Other Investments,” 18% for “Corporate Bonds,” and 2% for “Government Bonds.” [51,52] Although the precise reclassification decisions made by the IRS staff are unobservable since only final asset category totals are reported, we attempt to infer the nature and effectiveness of these adjustments in two steps. First, we analyze the specific types of assets that foundations originally report under “Investments–Other” to understand whether some would better fit in more precise categories and to verify that most of these assets are truly alternatives. Second, we compare SOI classifications and asset allocations to those produced by OpenAI’s API and to audited financial statements. Last, we show robustness to alternative asset groupings in our reach-for-yield analysis that largely mitigates any classification issues.

[51] At the aggregate level, the cleaned SOI data report a 17% lower allocation to “Investments–Other” ($1.16 trillion) compared to the raw 990-PF data ($1.39 trillion) for XML filing foundations in our sample.

[52] The reclassifications to “Equity” slightly exceeds “Other Investments” as a small number of reclassifications occur in “Equity” without affecting “Other Investments”.

IA.1.3.2 Internal Classifications using OpenAI

To better understand the types of assets foundations report under “Investments–Other” on the raw Form 990-PF filings—and how the IRS SOI team might reclassify them—we conducted significant classification work using OpenAI’s API. We scrape all ProPublica XML filings between 2013 and 2020 for foundations in our sample and the attached schedule to Part 2 line 13 for “Investments–Other.” This yields 61,971 foundation-year filings with 689,431 “Other Investments” entries, of which 111,927 entries have unique names after cleaning the text strings. We classify these entries using OpenAI’s API in `R`, specifying a fixed model version and setting the temperature parameter to zero to ensure reproducible results. The classification process consumes approximately 4.2 million tokens, incurring a cost of around $70 using the `gpt-4-0125-preview` model, which provides a practical balance between accuracy and processing speed.

We use the following prompt to classify assets:

```
classify_asset_type_batch <- function(fund_names, max_retries = 3) {
  prompt <- paste0(
    "You are a financial analyst with access to a broad knowledge base of institutional investment funds, including sources such as manager websites, public disclosures, and fund databases.\n\n",

    "Classify each of the following investment fund names into exactly one of the asset classes listed below, using your best judgment based on:\n",
    "- The fund name itself\n",
    "- Known fund structures and naming conventions\n",
    "- Publicly available documentation (e.g., Form 990s, SEC filings, 13F, Form ADVs, manager websites, and financial data platforms)\n\n",

    "**Important Guidance on Venture Capital:**\n",
    "  - Only classify a fund as 'Venture Capital' if you know from reliable, real-world sources that it is a venture capital fund or part of a VC structure.\n",
    "  - Do not assume based solely on terms like 'Ventures', 'Capital', or 'Partners' - but treat these terms as supporting cues if consistent with known VC naming patterns.\n\n",

    "**Important Guidance on 'Other':**\n",
    "  - Assign 'Other' only if *none* of the categories clearly apply after considering all available clues.\n",
    "  - Do not use 'Other' just because the name is vague - use fund manager names and known patterns to make the best-fit classification when possible.\n",
    "  - If the fund name is missing, invalid, or clearly nonspecific (e.g., '.', 'N/A'), assign 'Other'.\n\n",

    "**General Instructions:**\n",
    "  - You must classify based on the fund's *legal or investment structure*, not its sector or strategy.\n",
    "  - Use institutional knowledge and naming conventions to make informed, factual decisions. Do not guess.\n",
    "  - Return only the classifications in this format: 1. [Class], 2. [Class], 3. [Class], ...\n",
    "  - Do not include explanations or commentary.\n\n",

    "**Asset Classes:**\n",
    "  1. Public Equity - Publicly traded corporate equity (i.e., stocks), including individual securities \n",
    "     (e.g., Apple Inc., 3M CO COM, TENCENT HOLDINGS), equity ETFs, mutual funds, or ADRs that invest \n",
    "     primarily in public equity. Includes U.S. and non-U.S. equity. Also include public equity funds or ETFs \n",
    "     managed by firms like Vanguard, Fidelity, Schwab, iShares, SPDR, etc.\n",
    "  2. Public Fixed Income - Publicly traded fixed income instruments such as U.S. Treasuries, \n",
    "     municipal bonds, and corporate bonds. Includes mutual funds and ETFs from managers like Vanguard, \n",
```

```
    "     Fidelity, Schwab, iShares, and PIMCO that invest primarily in public fixed income. Exclude private credit,\n",
    "     structured/securitized credit (e.g., CLOs, ABS, MBS), and closed-end funds.\n",
    "  3. Hedge Fund - Includes event-driven, long/short, multi-strategy, fund of hedge funds, equity market neutral,\n",
    "     global macro, quant, managed futures, activist, short-only, long bias, relative value, risk parity, overlay,\n",
    "     and portable alpha strategies. Also include catch-all labels like 'HEDGE FUNDS' or 'HEDGE FUND INVESTMENTS'.\n",
    "     Do not include closed-end mutual funds or complex public mutual funds unless structured as hedge funds.\n",
    "  4. Registered Investment Advisor - Use only if the investment entity is clearly structured as an RIA and not\n",
    "     operating primarily as a hedge fund or asset manager.\n",
    "  5. Private Equity - Buyout, growth equity, restructuring, secondaries, co-investments, and private equity \n",
    "     fund-of-funds. Also include broad categories like 'PRIVATE EQUITIES', 'PRIVATE EQUITY FUNDS', etc.\n",
    "  6. Venture Capital - Seed, early-stage, and late-stage VC funds. Only classify as VC if supported by reliable sources.\n",
    "  7. Private Credit - CLOs, direct lending, mezzanine, special situations credit, real estate/infrastructure credit, \n",
    "     venture debt, and private credit funds of funds.\n",
    "  8. Private Real Estate - Core, core-plus, value-add, opportunistic, distressed, secondaries, co-investments,\n",
    "     or private real estate partnerships/funds. Also include direct real property ownership.\n",
    "  9. REIT - Publicly listed Real Estate Investment Trusts. Include U.S. and international REITs, and REIT-focused mutual funds or ETFs.\n",
    " 10. Private Infrastructure - Private infrastructure funds or partnerships focused on core, value-add, greenfield, \n",
    "     or opportunistic infrastructure projects.\n",
    " 11. Private Company - Direct ownership of equity or units in a private operating company that is not part of a pooled fund structure.\n",
    " 12. Cash - Cash or cash-equivalent holdings, bank accounts, sweep accounts, and short-term instruments like Treasury bills, CDs, or money market funds.\n",
    " 13. Commodities - ETFs or direct holdings in commodities such as gold, oil, natural gas, or agriculture. Exclude commodity fund-of-funds.\n",
    " 14. Real Assets and Natural Resources - Oil & gas partnerships, mining, timber, agriculture funds, land, mineral rights, or MLPs investing directly in real assets.\n",
    " 15. Cryptocurrency - Direct holdings of digital assets (e.g., Bitcoin, Ethereum), NFTs, or crypto-related ETFs or funds.\n",
    " 16. Derivatives - Forwards, futures, options, exotic options, swaps (interest rate, credit default, total return, etc.).\n",
    " 17. Other Fixed Income - Structured/securitized credit like MBS, ABS, CLOs. Include funds investing primarily in these.\n",
    " 18. Alternative Assets (Unclassified) - Alternative investments not clearly assignable to standard categories. Includes pooled LPs or mixed alt labels.\n",
    " 19. Other Public Asset - Public funds/ETFs/mutuals not clearly equity or fixed income. Includes pooled investment accounts.\n",
    " 20. Mutual Fund (Other) - Traditional or closed-end mutual funds that are not clearly equity, fixed income, or hedge funds.\n",
    " 21. Niche Investment - Art, collectibles, royalties, litigation finance, CAT bonds, life settlements, or other esoteric investments.\n",
    " 22. Other - Use only when no other category applies, or for invalid entries (e.g., '.', 'N/A').\n\n",

    "**Examples of ambiguous but classifiable entries:**\n",
    "  - 'Centerbridge Credit Partners' -> Hedge Fund\n",
    "  - 'Vanguard Target Retirement 2040 Fund' -> Public Equity\n",
    "  - 'Eaton Vance Tax-Managed Buy Write' -> Mutual Fund (Other)\n",
    "  - 'Fidelity Multi-Asset Income' -> Other Public Asset\n",
    "  - 'Oaktree Opportunities Fund' -> Private Credit\n\n",

    "Here are the funds to classify:\n\n",
    paste0(seq_along(fund_names), ". ", fund_names, collapse = "\n")
  )
}
```

We find that approximately 80% of assets internally reported as “Investments–Other” on the raw 990-PF filing appear to be non-traditional assets and in particular alternatives like hedge funds, private equity, venture capital, and real assets while traditional public assets (e.g., public equity and public fixed income) comprises the remaining 20 percent.[53] At the aggregate level, the total allocation to “Investments–Other” in the SOI harmonized microdata is about 17% smaller than in the raw 990-PF filings which closely aligns with the share of “Traditional” assets ($\approx$ 20%) identified by OpenAI’s classifications supporting the reliability of the SOI’s classifications.

Reproducibility. To assess classification consistency, we randomly sample 1,000 unique entries from the “Investments–Other” schedule and re-query them through OpenAI’s API 10 additional times. Using the above prompt, the model first classifies each asset entry into 30 detailed sub-asset classes (e.g., public equity, hedge fund, private equity) and then we aggregate these classifications into three broader categories: “Traditional Assets,” “Non-traditional Assets,” and “Other.” At the sub-asset class level, OpenAI’s API produces identical classifications across all 10 iterations 70 percent of the time while the majority of additional classifications agree with the baseline classification about 80 percent of the time. When aggregating to the broader asset groupings, we find that OpenAI’s API produces identical groupings 85 percent of the time in the additional ten iterations, while the majority of additional classifications agree with the baseline classification 91 percent of the time. Relative to the initial classification, subsequent iterations of OpenAI’s API are slightly more likely to reclassify asset entries into “Non-traditional Assets” rather than “Traditional Assets,” suggesting that the estimated 60-80 percent share of alternative assets in “Other Investments” is likely a conservative lower bound.

Accuracy. To verify the classification accuracy, we randomly sample 2,604 entries from the asset class groupings predicted by OpenAI’s API, hand-checking both the specific asset

[53] OpenAI’s API classifies about 20 percent of assets into the “Other” category, which we also consider as “alternatives” based on reviewing its composition. OpenAI’s classification “Other” includes asset entries that were too vague or ambiguous for ChatGPT to classify with confidence into the provided subclassification list. These entries often consist of generic references to private investments, such as “Limited Partnerships,” “Other Investments,” and “Private Assets” which lack sufficient detail for precise categorization. In the manual validation we provide below of OpenAI’s API responses, we find almost no instances in which classifications of “Other” should be categorized as “Traditional” or public assets.

class and whether the asset should have been classified outside of "Investments–Other." We construct the sample size assuming 80 percent correct classification accuracy, based on a power calculation test. We find that approximately 7 percent of "Investment–Other" entries classified by OpenAI as "non-traditional" actually correspond to "traditional" assets. Note that we only randomly sample and verify entries in the "non-traditional" and "other" groups. It is possible that some assets classified by OpenAI as "traditional" are in fact "non-traditional." Moreover, many of these publicly traded funds provide underlying alternative exposures, so the 7 percent figure likely overstates the true misclassification rate. For example, the AQR Style Premia Alternative Fund is a market-neutral liquid alternative structured as a mutual fund, blurring the line between traditional and non-traditional classifications.

IA.1.3.3 Comparing Asset Totals Across Different Sources

We also assess whether the SOI harmonized microdata provide a more accurate measure of alternative asset allocations than the raw 990-PF filings. We compare both sources against audited financial statements for the subset of foundations listed in Table A.1 for 2019.[54] Across these 29 foundations, the average (median) allocation to alternatives reported in the audited financial statements is 50% (56%). In contrast, the raw 990-PF filing consistently overestimates alternative exposures with an average (median) of 62% (68%). The SOI harmonized microdata, by comparison, more closely align with the audited figures, reporting an average (median) allocation of 49% (50%). This reflects a meaningful improvement due to the SOI's reclassification efforts, which reallocate assets from "Investments–Other" to more appropriate line items. This improvement from the SOI harmonized microdata is further evident when examining discrepancies: differences between audited allocations and the SOI harmonized allocations are approximately symmetrically distributed around zero, while the

[54]We exclude the Conrad N. Hilton Foundation and the Simons Foundation, which do not report a decomposition of investment assets in their audited financial statements.

raw 990-PF data overstates alternative allocations more than 85 percent of the time.[55,56]

We also provide two additional validation exercises to show that the SOI reclassifications systematically improve upon the asset allocations from the raw 990-PF. First, we compare the distribution of asset allocations to "Investments–Other" across the raw 990-PF, the cleaned harmonized SOI microdata, and the asset allocations from aggregating the OpenAI API classifications. Similar to the audited financial statement comparison, we find that the SOI harmonized data best approximates the distribution of asset allocation to "Investments–Other" compared to the API-based classifications, while the raw 990-PF systematically overestimates exposure to "Investments–Other."

Second, we back out the likely reclassifications of the SOI team by iterating through the potential combination of asset entries in the raw 990-PF"Investments–Other" that approximate the total to "Investments–Other" in the cleaned SOI harmonized asset total. For example, in its 2020 raw 990-PF filing, the Charles and Lynn Schusterman Family Foundation (EIN: 73-1312965) reported the following three asset entries under "Other Investments": (1) Limited Partnerships totaling $2,703,849,197, (2) Miscellaneous Investments totaling $57,190, and (3) Stocks and Stock Funds totaling $289,993,823. The total for these three entries was $2,993,900,210. In contrast, the cleaned SOI harmonized microdata reports

[55] While the SOI harmonized microdata generally provide an unbiased estimate of a foundation's alternative asset exposure, comparisons with audited financial statements are imperfect. First, audited financial statements might underreport alternatives, especially when hedge funds are not separately identified (e.g., Richard King Mellon Foundation) or are ambiguously labeled as "Long-Only" (e.g., Carnegie Corporation). Second, SOI reclassifications might exclude true alternatives from "Investments–Other." For example, the Alfred P. Sloan Foundation reported $1.58 billion in "Other Investments" on its 990-PF, but the SOI data retained only $503 million, correctly removing headings of "Domestic Equity" and "International Equity" but also removing "Private Equity". Nonetheless, the SOI harmonized microdata still comes closer to the allocation to alternatives in the audited financial statement of $769 million. The SOI removing entries from "Investments–Other" that are truly alternatives is much more common when foundations collapse their asset holdings into broad categories rather than the individual holding level. Even the reclassification of asset class headings appears to be somewhat idiosyncratic, as the SOI reclassification retained all assets in "Investments–Other" from the Barr Foundation's internal reporting, which included the broad asset class heading "Investments in Limited Partnerships–Private Equity."

[56] The asset allocations of our 29 large private foundations in the SOI harmonized microdata closely mirror those reported in Commonfund's 2019 survey of large foundations (assets over $500 million). On average, the SOI harmonized microdata allocates 9% to fixed income (5% government and 4% corporate bonds), 36% to equity, and 49% to other investments. Commonfund reports average allocations of 7% to fixed income, 40% to equity (23% domestic and 17% international), and 49% to alternative strategies. We find similarly close alignment between the SOI harmonized data and Commonfund's survey for foundations with $101-$500 million and under $101 million in assets.

an "Investments–Other" balance of $2,703,906,387 suggesting that the SOI reclassified the "Stocks and Stock Funds" into "Investments–Corporate Stock" (Part II, Line 10b), a more appropriate category.[57,58,59] While an imperfect proxy, we observe a strong positive correlation (≈ 0.60) between the likelihood an individual asset entry is likely retained by the SOI and its classification as an alternative by OpenAI's API. This correlation rises to above 90 percent when aggregating asset entries into decile bins (e.g., 90%-100%), based on the likelihood an asset was retained by the SOI, and the proportion of assets within this group (e.g., 87% of assets in the 90%-100% decile bin were classified as alternatives by OpenAI's API) that OpenAI's API classified as "Non-Traditional" assets.

IA.1.3.4 Different Allocation Groupings to Mitigate Classification Concerns

To test the robustness of our reach-for-yield results to potential classification issues, we reclassify assets into three broader categories, as reported in Internet Appendix Table 4: (i) **Risky**, which combines "Corporate Equity" (Part II, Line 10b), "Other Investments" (Part II, Line 13), "Mortgages" (Part II, Line 12), and "Land/Buildings" (Part II, Line 14); (ii) **Bonds**, which combines "Corporate Bonds" (Part II, Line 10c) and "Government Bonds" (Part II, Line 10a); and (iii) **Cash**, which combines "Cash" (Part II, Line 1) and "Savings Equivalents" (Part II, Line 2). We find that our "reach-for-yield" results remain economically similar to the baseline, while aggregating asset groupings mitigates concerns of the IRS reclassification procedures.

While the exact reclassification procedures of the IRS SOI staff are unobservable, on average, they appear to improve upon the foundation's internal asset allocation reporting. Since our measures of alternative asset exposure correct for the upward-biased measurement error present in the raw 990-PF filings, any remaining measurement issues from the SOI harmonized procedures are more likely to be classical, leading to larger standard errors but

[57] To allow for rounding differences and minor discrepancies, we treat a combination as a match if its total is within 10% of the smallest asset value in the "Investments–Other" schedule. In the Schusterman example, this tolerance equals $5,719, or 10% of $57,190.

[58] When multiple combinations approximate the SOI total, we record the frequency with which each asset entry appears in the matched sets (e.g., an asset included in both valid combinations is assigned a higher likelihood of retention).

[59] Due to computational limits, we restrict the analysis to foundation-year observations with fewer than 20 asset entries in "Investments–Other."

unbiased coefficient estimates in our reach for yield regression estimates.[60] Our analysis using a subset of XML filing data shows a majority of these assets placed in "Investments–Other" are truly alternatives, but we admit that this group might also include more traditional investments or commingled funds if the foundation reports them in this category and the SOI staff fails to reclassify them as we do not observe the final classification breakdowns.[61] Because our OpenAI API classification procedures are only possible in cases in which foundations have XML filing disclosure which only begins adoption in 2013 with many foundations adopting much later or having yet to adopt (e.g., the Bill and Melinda Gates Foundation Trust begins using XML filings in 2020), unfortunately, we are not able to update the asset classification totals from the SOI harmonized microdata in a systematic way due to these limitations.

IA.1.4 PitchBook

To examine the performance of private foundations in private capital funds, we analyze the commitments made by limited partners (LPs) to private equity and venture capital funds, utilizing data provided by PitchBook. PitchBook, a private markets data and analytics firm, aggregates information on fund performance metrics, fundraising activities, LP commitments, mergers and acquisitions (M&A), deal activity, and private company data. Brown et al. (2015) and Harris, Jenkinson, and Kaplan (2014) offer a comprehensive comparison of the main private capital data providers, including Burgiss (now MSCI), Preqin, PitchBook, and Cambridge Associates.

Our analysis begins with a dataset of 91,522 commitments made by U.S. and non-U.S. LPs to private equity and venture capital funds for vintage years 1991 to 2018, excluding commitments from secondary and fund of funds. Private equity includes buyout and growth/-expansion funds, while venture capital includes general, early-stage, and late-stage funds. We first clean the data by removing duplicate observations, applying the following steps: (1)

[60] Additionally, we find no evidence that measurement error in the SOI's asset allocation measures is systematically related to interest rate fluctuations. For example, foundations report highly persistent asset entries over time in "Other Investments" (e.g., listing individual securities or grouping them by type and the types of assets they report in this line item) and the SOI's classification practices are stable over time. These patterns suggest that any measurement error—whether stemming from the foundation's reporting or the SOI's reclassification—is unlikely to be connected with interest rate changes. This supports the assumption that any remaining error is classical in nature and results in unbiased coefficient estimates.

[61] For example, some foundations provide limited documentation to the IRS, such as not directly reporting fund names or aggregating assets into buckets which the IRS SOI staff might not decompose.

retaining the largest commitment from an LP to a fund (eliminating 462 observations); (2) keeping the current commitment to a fund (eliminating 497 observations); (3) retaining the most recent IRR (eliminating 545 observations); (4) computing and retaining the average IRR for entries that are perfect duplicates in terms of fund type, commitment date, and commitment size (eliminating 279 observations); (6) retaining the largest fund size (eliminating 6 observations); (7) retaining the observation with closest vintage year to actual commitment date (eliminating 11 observations); and (8) remove duplicate funds that slightly differ because of PitchBook industry definition or other text based variables (eliminating 53 observations). After these steps, we are left with 89,669 commitment-fund observations, of which 56,094 have non-missing performance metrics. Among the funds with performance information, we drop funds where the IRR measurement date is less than 5 years from the vintage year, thus leaving us with 55,236 observations. The data contains commitments from 6,148 unique LPs to 2,932 private equity funds and 1,557 venture capital funds with IRR information.

To study the differential performance by LP type, we begin by adopting PitchBook's classification of LPs, which includes the following categories: public pension funds, corporate pension funds, union pension funds, family offices, investment firms (including direct investment, insurance companies, mutual fund companies, private investment funds, and real estate investment companies), philanthropic and agency groups (including economic development agencies, endowments, universities (non-endowments), foundations, government agencies, and sovereign wealth funds), advisors (such as discretionary advisors, investment advisors, money management firms, and wealth management firms), and other limited partners (such as banking institutions, corporations, high-net-worth individuals, and other limited partners). We then create separate dummy variables to reflect LP groupings, similar to those employed by Lerner, Schoar, and Wongsunwai (2007) and Sensoy, Wang, and Weisbach (2014). Specifically, we classify LPs into the following categories: (1) endowments (foundations, endowments, and university (non-endowment) funds); (2) public pension funds (public pension funds, union pension funds, and government agencies); (3) advisors; (4) insurance companies; (5) investment firms; (6) all other LPs. To further investigate the performance of private foundations, we categorize LPs within the endowment group into three subcategories: (1) private foundations, (2) university endowments (including private colleges, affiliated foundations of public universities, and university and colleges defined benefit funds), and (3) other nonprofit charities (e.g., hospitals, museums). To study the impact of LP size, we further classify private foundations as large, medium, or other if their inflation-adjusted assets are greater than $500 million, between $250 million and $500 million, and less than $250 million, respectively. Assets are measured before or in the same fiscal year as the fund vintage year.

In most regressions, we include additional fixed effects for a fund's preferred industry and geography. We begin with the industry and geography classifications provided by PitchBook, which assigns each fund to a detailed classification scheme. However, this level of granularity could oversaturate our model, as PitchBook identifies more than 120 unique industry combinations and over 600 variations of preferred geographies. To address this, we create a coarser grouping with five industry buckets (Unknown, Diversified, B2B, B2C, Financials, Healthcare) and geography categories (North America Only, Europe Only, Developed, Global, Unknown).

IA.1.5 Simulation

Our main simulation results presented in Table 11 examine the sustainment of principal and optimal spending policy across different asset allocations, lifespans, and time preferences. These simulations use realized returns and covariances from 1991 to 2020. We use Bloomberg's Bloomberg Global-Aggregate Total Return Index Value Unhedged for global bonds, Russell 3000 Total Return Index for domestic equity, MSCI ACWI ex USA (gross) Total Return Index for international equity, Hedge Fund Research's Fund-Weighted Composite Index for hedge funds, Cambridge Associate's pooled private equity and venture capital index for private equity and venture capital, FTSE Nareit US Real Estate Index equity REIT index for REITs, S&P GSCI Total Return index for commodities, and inflation data comes from FRED's Consumer Price Index for All Urban Consumers.

In supplemental analysis provided in Table IA.18, we replace historical returns with forward-looking return expectations from investment consultants and institutional investors, as provided by Couts, Gonçalves, and Loudis (2023) in their Table IA.2. We compose the expected returns of our main asset classes using individual asset classes where possible for hedge funds ("Hedge Funds"), REITs ("REITs"), commodities ("Commodities"), and we use the historical inflation series from FRED from 1991 to 2020 as this series is not provided in their survey. For the remaining asset classes, we construct expected returns using weighted blends of surveyed asset classes based on the strategy's composition with weights as follows:

40% “US Govt Bonds” and 60% “Global Bonds (Ex US)” for global bonds, 90% “US Equities (Large Cap)” and 10% “US Equities (Small Cap)”, 70% “Global Equities (Developed, Ex US)” and 30% “Global Equities (Emerging)” for international equity, and 75% “Private Equity” and 25% “Venture Capital” for private equity and venture capital. We use the historical covariances from 1991 to 2020 in this simulation for simplicity, which closely approximate the covariances computed using the asset class moments and correlation matrix provided by Couts, Gonçalves, and Loudis (2023).

IA.2 Variable Description and Construction

Age. Age of a foundation, computed as the date of the current year less the foundation’s first ruling year plus one. If the ruling year is missing, age is computed as the date of the current year less the foundation’s first year in the IRS Core BMF (business master files) plus one. If missing, age is computed as the date of the current year less the foundation’s first year in the SOI data plus one. Source: IRS Form 990-PF, SOI, NCCS Core Files.

Cash & Equivalents. Percentage of the foundation’s assets allocated to cash and saving equivalents. This includes deposits in checking accounts, deposits in transit, change funds, petty cash funds, any other non-interest-bearing account, money market funds, commercial paper, certificates of deposit, and U.S. Treasury bills. Source: IRS Form 990-PF, Part II – Lines 1 and 2, Column c. SOI element name: A230, A240.

Charitable Trust. Indicates whether a foundation is a charitable trust. Source: IRS Form 990-PF. SOI element name: E050.

Concentrated. Indicates whether a foundation holds a single stock comprising over 40% of its portfolio. We hand-collect this information from IRS Form 990-PF for foundations that are above $250 million in investment assets at any point during the sample. Source: IRS Form 990-PF.

Contributions (% Assets). Proportion of the total value of contributions, gifts, and grants received by a foundation, scaled by the foundation’s total assets at the beginning of the year adjusted for half of the contributions. Source: IRS Form 990-PF, Part I – Line 1a. SOI element name: R010, A400.

Corporate. Indicates whether a foundation is a corporate foundation which is funded primarily by a for-profit corporation based on its final National Taxonomy of Exempt Entities

(NTEE) code. Source: NCCS Core Files. NCCS Core element name: nteefinal.

Corporate Bonds. Percentage of the foundation's total assets allocated to corporate bonds. This includes domestic and international corporate bonds, active and passive bond funds, mortgage-backed securities, and asset-backed securities. Source: IRS Form 990-PF, Part II – Line 10c. SOI element name: A340.

Distributions (% Assets). Proportion of the total value of distributions paid by a foundation, scaled by the foundation's total assets at the beginning of the year adjusted for half of the contributions. Distributions consist of investment-related expenses and distributions paid. Source: IRS Form 990-PF, Part I – Line 26, Column d. SOI element name: X320, A400.

Equity. Percentage of the foundation's assets allocated to equity. This includes domestic and international corporate stocks and active and passive equity funds. Source: IRS Form 990-PF, Part II – Line 10b. SOI element name: A340.

Grantmaking. Indicates whether a foundation is a grantmaking foundation based on its final National Taxonomy of Exempt Entities (NTEE) code. Source: NCCS Core Files. NCCS Core element name: nteefinal.

Government Bonds. Percentage of the foundation's assets allocated to government bonds. This includes U.S. and state government obligations that mature in one year or more. Source: IRS Form 990-PF, Part II, Line 10a. SOI element name: A320.

Independent. Indicates whether a foundation is an independent foundation based on its final National Taxonomy of Exempt Entities (NTEE) code. Source: NCCS Core Files. NCCS Core element name: nteefinal.

Investment Fees. Total operating and administrative investment expenses deducted from investment earnings. Refer to section IA.1.2.2 of the Internet Appendix for details on the calculation. Source: IRS Form 990-PF, Part I, Line 26b. SOI element name: X170.

Investments in Land & Mortgages. Percentage of the foundation's total assets allocated to investments in land, buildings, equipments, and mortgage loans. Source: IRS Form 990-PF, Part II – Lines 11 and 12, Column c. SOI element name: A350, A360, and A400.

Net Return. We compute the net return for a given foundation as:

$$R_{i,t} = \frac{\Delta\text{NA}_{i,t} - \text{Contr.}_{i,t} + \text{Distr.}_{i,t} - \text{Inv. Fees}_{i,t} - \text{Taxes}_{i,t}}{\text{Inv. Assets}_{i,t-1} + \tau_c \times \text{Contr.}_{i,t} - \tau_d \times \text{Distr.}_{i,t}} \tag{IA.5}$$

where $\Delta \text{NA}_{i,t}$ denotes the annual change in net assets (fair market value of total assets minus liabilities) for private foundation i at time t. Contr._{it} represents the total contributions, gifts, and grants received as inflows, while Distr._{it} captures distributions made to charitable purposes and expenses (including operating and administrative expenses) which collectively count towards the 5% spending rule as outflows from the foundation. Finally, we subtract disclosed investment expenses and current excise taxes to arrive at a net investment earnings figure. To estimate net returns, we divide by the beginning-of-year investment assets, adjusted for the timing of inflows and outflows, following Dahiya and Yermack (2021), with $\tau_c, \tau_d = 0.5$ (half-year). We include cash and savings in the denominator to adopt a conservative approach when estimating returns. Source: IRS Form 990-PF, Part I – Line 1 Column a., Line 18 Column a., Line 26 Column a., Line 26 Column b., Part II – Line 1, Column c., Line 2, Column c., Line 10a, Column c., Line 10b, Column c., Line 10c, Column c., Line 11, Column c., Line 12, Column c., Line 13, Column c., Line 16, Column c., Line 23, Column b., SOI element name: R010, X080, X150, X170, A230, A240, A320, A330, A340, A350, A360, A370, A400, and L020.

NTEE Fixed Effects. Denotes which NTEE major group (10) a private foundation belongs to based on its final National Taxonomy of Exempt Entities (NTEE) code. Source: NCCS Core Files. NCCS Core element name: ntmaj10.

Operating. Denotes whether a foundation is an operating foundation which conducts its own charitable activities. Source: IRS Form 990-PF, Part VII-A – Question 9. SOI element name: Q030.

Other Assets. Percentage of the foundation's total assets allocated to other investments. This includes accounts receivable, pledges receivable, grants receivable, receivables due from officers, other notes & loans receivable, inventories, prepaid expenses, land, buildings, equipments, and other assets. Source: IRS Form 990-PF, Part II – Lines 3, 4, 5, 6, 7, 8, 9, 14, and 15 Column c. SOI element name: A250, A260, A270, A280, A290, A300, A310, A380, A390.

Other Investments. Percentage of the foundation's total assets allocated to other investments. This includes other investments assets not classified in other specific lines, and may include private equity funds, venture capital funds, hedge funds, real estate funds, other limited partnerships, natural resources and infrastructure funds, commodities, derivatives, and distressed funds. It may also include more traditional assets not classified elsewhere.

Program-related investments (PRI) are excluded. Source: IRS Form 990-PF, Part II – Line 13c. SOI element name: A370.

Paid. Total number of other employees paid over \$50,000. Source: IRS Form 990-PF, Part VIII, Line 2. SOI element name: H500.

Qualified Distribution Ratio (QD). The ratio of qualified distributions to the distributable amount based on the 5% minimum spending rule, after all IRS-required adjustments. Source: IRS Form 990-PF, Part XI – Line 7, Part XII – Line 4. SOI element name: D060, M080.

Return$^{c}_{t-1:t}$. The annual return on a foundation's concentrated security holding over the last year. Concentrated foundations are those where a single stock comprises 40% of its portfolio. We set this to zero for non-concentrated foundations. We hand-collect this information from IRS Form 990-PF for foundations that are above \$250 million in investment assets at any point during the sample. Source: CRSP.

Total Assets. Total fair market value of assets for a foundation at fiscal year-end, including investment assets. Source: IRS Form 990-PF, Part II, Line 16c. SOI element name: A400.

Total Investment Assets. Total fair market value at fiscal year-end of a foundation's investments in government bonds, equity, corporate bonds, physical asset investments (land, buildings, and equipment), mortgage loans, and other investments (includes alternative assets). Source: IRS Form 990-PF, Part II, Lines 1, 2, 10a, 10b, 10c, 11, 12, 13.

Unpaid. Number of uncompensated officers and directors. Source: IRS Form 990-PF, Part VIII. SOI element name: C100.

Yield. The yield on a U.S. Treasury Security at 10-Year Constant Maturity. Source: FRED 10-Year U.S. Treasury Securities Constant Maturity (DGS10).

IA.3 Institutional Background

IA.3.1 Definition and Objectives

A private foundation is an independent legal entity designed for charitable giving. Typically established through a gift from an individual, family, or corporation, private foundations rely primarily on investment returns to fund grants to public charities. This structure allows families or corporations greater control over the timing and use of donations, creating a perpetual vehicle to support specific causes. Like public corporations, private foundations are overseen by a board of directors or trustees and guided by a mission statement to ensure clarity and focus. For example, the Bill and Melinda Gates Foundation's mission is to "create a world where every person has the opportunity to live a healthy, productive life" (Bill & Melinda Gates Foundation 2024). While historical concerns about self-dealing by trustees exist, a 1965 Treasury Department study recognized private foundations as "a powerful instrument for evolution, growth, and improvement in the shape and direction of charity" (American Bar Association 1966).[62]

IA.3.2 Tax Status, Ownership Interest, and Spending Requirements

Private foundations are classified as 501(c)(3) organizations by the IRS and are primarily tax-exempt. Contributions to private foundations are tax-deductible by the donor up to 30% of adjusted gross income (AGI) for cash and noncash contributions, and 20% of AGI for noncash contributions of capital gain property (e.g., appreciated stocks).[63] Private foundations are required to file Form 990-PF with the IRS, a publicly disclosed document used for tax filing purposes. This form is intended to improve the transparency of the contributions, financial structure, and investment performance of private foundations. There are excise tax penalties for private foundations that invest alongside donors, related foundation entities, or "self-deal." The Tax Reform Act of 1969 was passed to limit the use of private foundations for personal gain rather than philanthropic purposes, requiring the imposition of no "self-dealing" rather than a more moderate restriction only on "arm's length" transactions

[62] Orol (2021) documents that private foundations have played a key role in the development and support of the charitable sector in the United States over the last 100 years. Examples of the benefits of their gifts include fighting the yellow fever epidemic in 1915 (Rockefeller Foundation), providing support for public libraries in the late 1800s' to early 1900s' (Carnegie Foundation), development of the 911 emergency response system (Robert Wood Johnson Foundation), and more recently fighting the Covid-19 pandemic (Bill and Melinda Gates Foundation).

[63] Our paper is unable to answer whether these tax deductions are too generous and whether the government removing these reductions and funding their own charitable efforts would be welfare optimizing (see Galle (2015), Galle (2021), and Klausner (2003) for a related discussion). Allen and McAllister (2019) document the benefits of the private foundation grantmaking process and sophistication, while there are likely positive spillovers to the charitable sector from the presence of privately funded philanthropy.

(Worthy 1975). Additionally, the Tax Reform Act of 1969 mandated that private foundations were only permitted to hold up to 20% of the voting stock of a corporation (Worthy 1975). These restrictions along with the restriction on speculative and unsuitable investments seek to promote the integrity of foundations' business dealings and align donors and trustees' incentives with societal benefit.

Private foundations are required to distribute an average of at least 5% of their net investment assets annually toward charitable activities, grants, and other qualified distributions. This rule ensures that private foundations actively support charitable causes rather than accumulate assets without benefiting the public. Failure to meet the minimum spending requirement might result in penalties and, in extreme cases, the loss of the foundation's tax-exempt status. Private foundations can carry forward distributions that exceed their mandated spending requirement to offset future distribution obligations for up to five years. The spending requirement is different for private operating foundations, which directly conduct charitable programs and activities. These foundations must allocate at least 85% of their adjusted net income to their own charitable programs rather than making grants to other organizations.[64]

[64] Certain private non-operating foundations might operate as non-exempt charitable trusts under Section 4947(a)(1) of the tax code. These trusts must dedicate their assets fully to charitable purposes, claim an income-tax deduction, and adhere to the rules applicable to 501(c)(3) private foundations. They are required to file Form 990-PF like other private foundations and must also file Form 1041 if they generate taxable income. Charitable trusts are commonly established by wealthy families after an individual's death to continue their philanthropic legacy.

IA.3.3 Performance Persistence

An important question is whether performance is persistent over time, and whether persistence explains the observed patterns in risk-adjusted returns.

First, we group private foundations into the six size buckets described previously and into deciles based on their size-adjusted, net investment return in the previous fiscal year. We then compute the proportion of foundations that fall into the same performance decile in the following year within the same size bucket. Panel A of Table IA.20 shows the probability that top-performing foundations do not transition out of the top-performing decile the following year is about 25.5%. If performance were random, about one in ten foundations would fall into the same return decile each year. Similarly, there is persistence in the worst-performing foundations, as about 25.4% of the worst performers (decile 1) fall in this decile in the following year. Notably, there is also strong evidence for volatility in the performance of private foundations as the top (bottom) performing decile foundations transition to the bottom (top) decile 19.1% (18.1%) of the time in the following year.[65]

IA.3.4 Donor-Advised Funds

Lastly, we shed additional light on the spending decisions of private foundations and examine the interplay between private foundations and Donor-Advised Funds (DAFs) and the degree to which private foundations respond to the observed needs around them. To examine the giving of private foundations to DAFs, we scrape all 990-PF filings available in XML format from ProPublica and match contributions to a known list of the 45 largest commercial DAFs provided by DataLake Nonprofit Research, LLC. Figure IA.6 documents that giving from private foundations to DAFs was over $3 billion from 2010 to 2020 or about 0.6% of private foundation spending went towards DAFs.[66,67]

[65] Panel B of Table IA.20 reports the *p*-values from an empirical bootstrap and finds only two of the transition matrices are statistically insignificant, and the chi-square *p*-value is zero providing strong evidence in favor of performance persistence. We thank an anonymous referee for suggesting this test.

[66] Our descriptive results are comparable in magnitude to those found in a study conducted by the Institute for Policy Studies available at https://inequality.org/wp-content/uploads/2022/03/Private-Foundation-Giving-to-Commercial-DAFs-Final.pdf

[67] The 5 largest private foundations supporting DAFs include: 136 Fund ($223 million), Spirit Foundation ($164 million), Zoom Foundation ($139 million), Matan B'Seter Foundation ($112 million), and the Intel Foundation ($93 million). The 5 largest DAF sponsors are Fidelity Investments Charitable Gift Fund, Schwab Charitable Gift Fund, National Philanthropic Trust, Vanguard Charitable Gift Fund, and National Christian

A private foundation's support of donor-advised funds counts towards the 5% minimum spending threshold but has potential negative implications to the philanthropic sector due to the lack of constraints surrounding DAF giving. Giving to DAFs is beneficial as it allows private foundations the flexibility of choosing the ultimate timing of the gift while the downside is that DAF giving has worse governance due to fewer restrictions on gifts and provides complete anonymity. The results in Table IA.21 are somewhat mixed in whether private foundations use DAFs for the ultimate benefit of society or their own self-interest. The results in columns (1) and (2) document that larger and more sophisticated foundations are more likely to give to DAFs. The results in columns (3) and (4) show that conditional on giving to a DAF, the proportion of a private foundation's giving to DAFs scaled by its total giving is larger when a private foundation experiences a positive return shock, consistent with a desire to smooth contributions rather than a nefarious activity.

IA.3.5 Disaster Relief

A key question surrounding the philanthropic motives of private foundations is how and the degree to which they respond to unexpected needs when the marginal benefit of support increases. If private foundations are only self-interested, their spending patterns would be rigid and unlikely to respond to additional needs while if they are interested in benefiting society, we should observe significant increases in spending in times of crisis and need. We use exogenous shocks of natural disasters, measured through the Federal Emergency Management Agency (FEMA) at the state level from 1998 onward, to examine the responsiveness of private foundations to exogenous shifts in the marginal benefit of giving.[68] The results in the first two columns of Table IA.19 show that a one standard deviation increase in a state's lagged FEMA aid received (about $1.5 billion) results in increases in a foundation's spending ratio by about 3 basis points in the current period. While this result is economically small in magnitude, it fails to capture the substitutionary effect of grants shifting across the philanthropic sector and heterogeneous treatment effects by foundation type (e.g., a foundation with a mission to support the arts is unlikely to respond with additional giving to a wildfire).

Foundation Charitable Trust.

[68] We thank FEMA for making this data available at https://www.fema.gov/openfema-data-page/public-assistance-funded-projects-details-v1

Figure IA.1: Asset Allocation by Foundation Age

This figure shows the average asset allocation by private foundations from 1990 to 2020 from the IRS SOI harmonized microdata. Age quartiles are defined within a given calendar-month, calendar year.

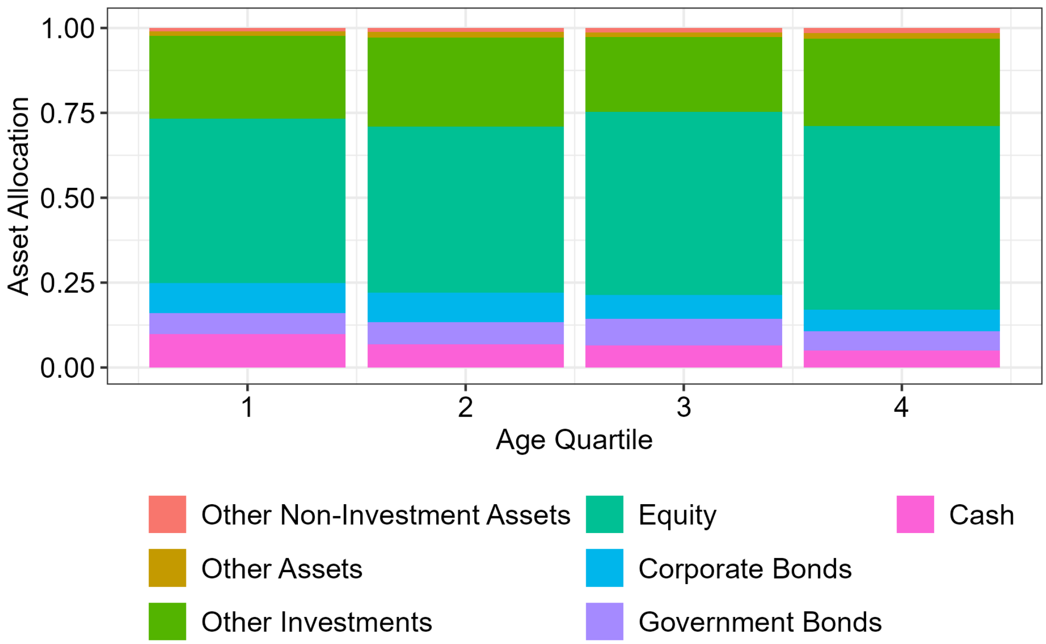

Figure IA.2: Net Returns and Spending Ratio by Foundation Age

This figure shows the average net return and spending rate by private foundations from 1990 to 2020 from the IRS SOI harmonized microdata. Age quartiles are defined within a given calendar-month, calendar year.

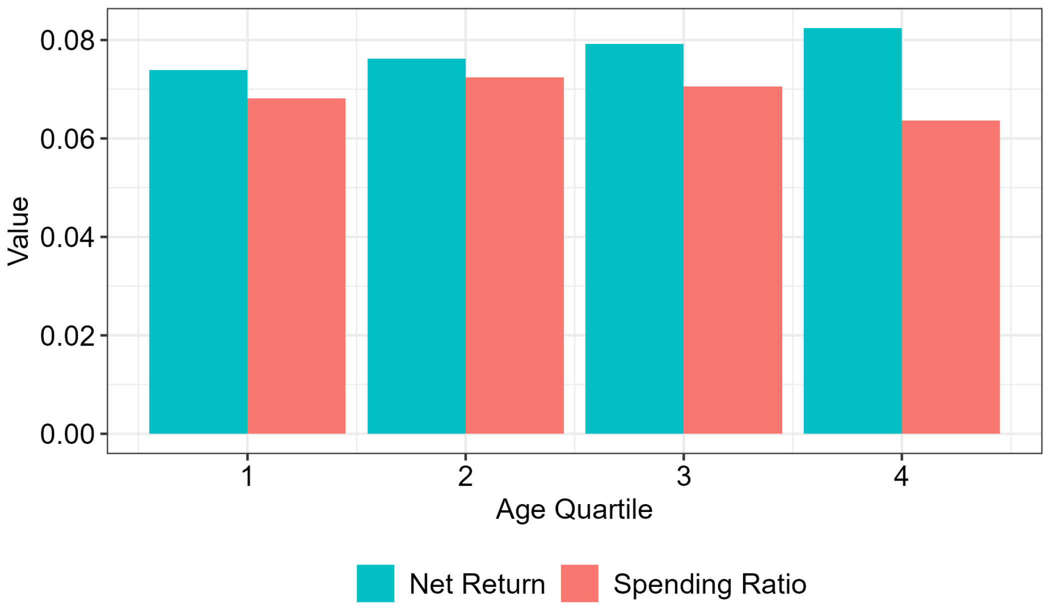

Figure IA.3: Asset Allocation by Foundation Type

This figure shows the average asset allocation by private foundations from 1991 to 2020 from the IRS SOI harmonized microdata.

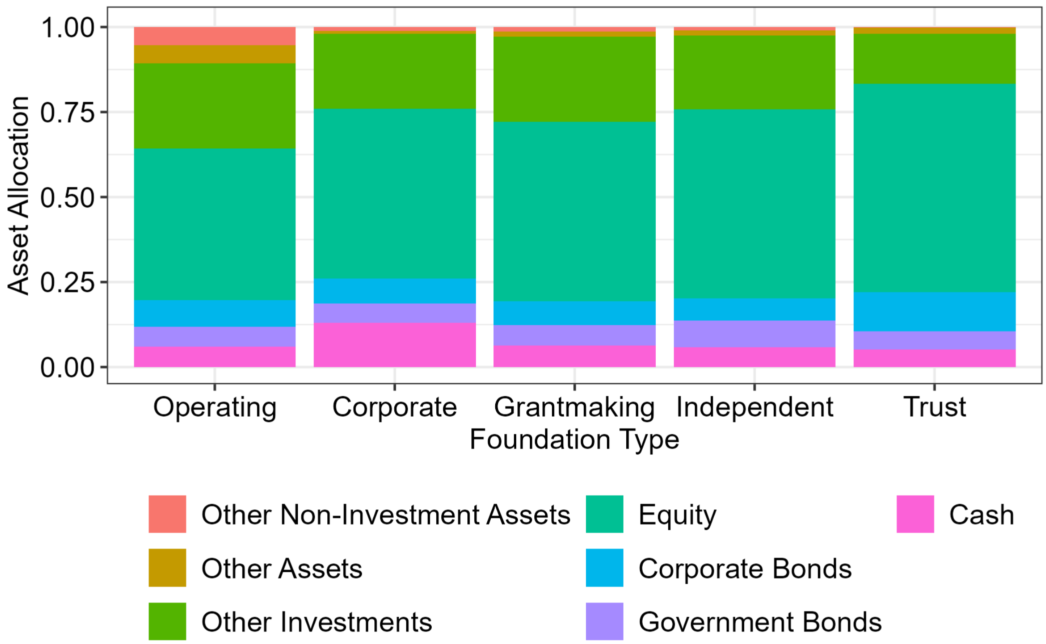

Figure IA.4: Investment Returns and Spending Ratio by Foundation Type
This figure shows the average net return and spending rate by private foundations from 1991 to 2020 from the IRS SOI harmonized microdata by a foundation's type.

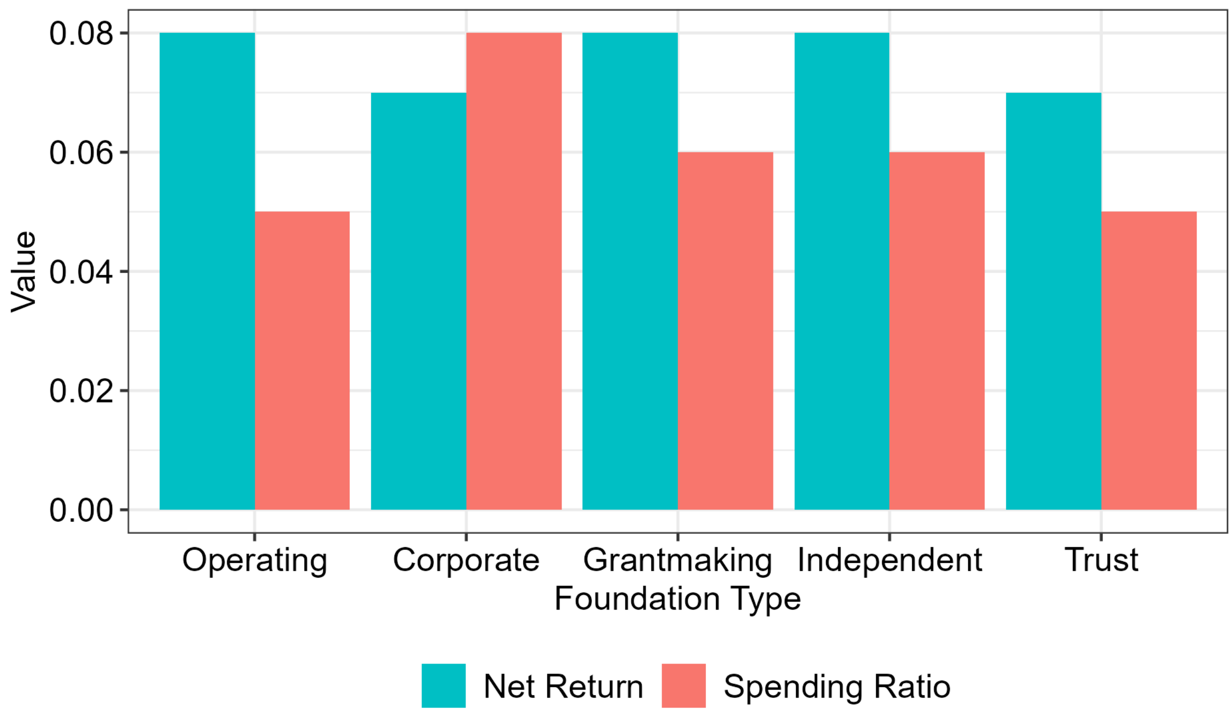

Figure IA.5: Gifts by Date of Receipt vs Fiscal Year End

This figure shows the proportion of gifts (bars, left axis) and the aggregate fair market value of gifts in billions of dollars (dashed line, right axis) received m months from the end of the fiscal year. For example, for a foundation with a fiscal year ending on 12/31, gifts received in December are considered to be received 0 months from the fiscal year end.

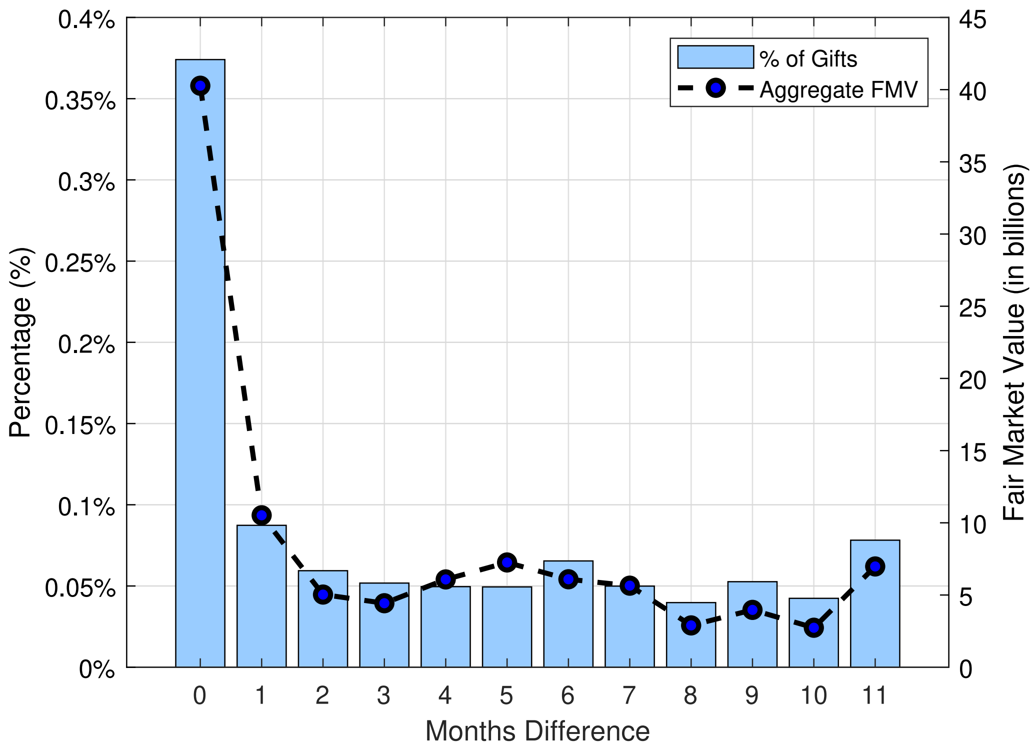

Figure IA.6: Gifts to Donor-Advised Funds (DAFs) Over Time

This figure shows the total giving from private foundations to DAFs from 2010 to 2020. Private foundation contributions were extracted from the XML filings on ProPublica.org where available. Contributions to DAFs were categorized by using a list of the 45 largest commercial DAF sponsors provided by DataLake Nonprofit Research, LLC. Giving from private foundations to DAFs is aggregated by a foundation's end reporting calendar year.

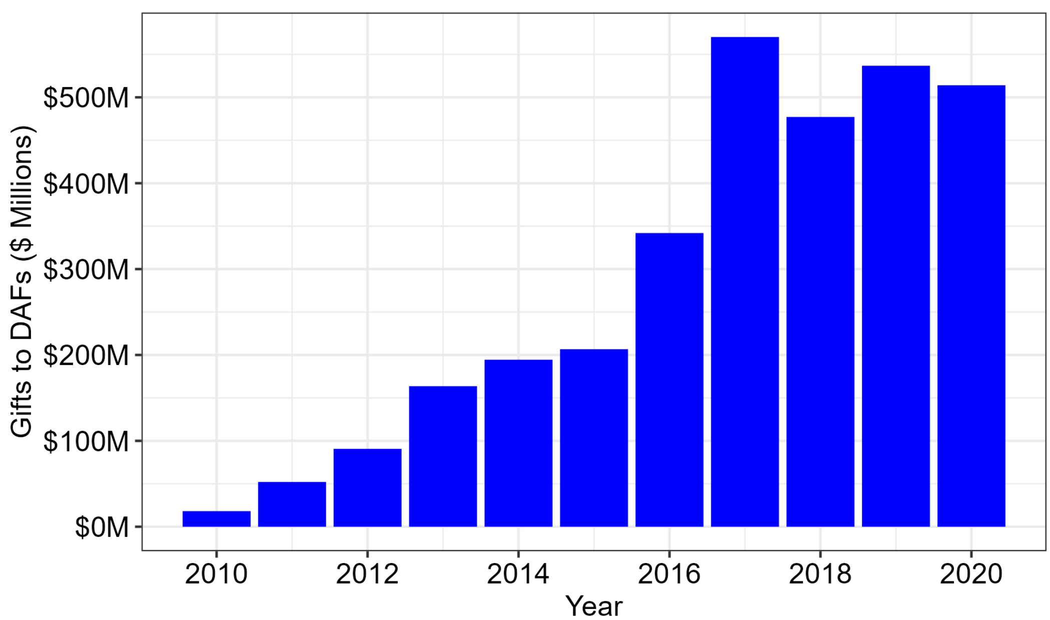

Table IA.1: Asset Allocation and Investment Performance of Private Foundations by Size

This table reports summary statistics for private foundations' asset allocation and investment returns from tax years 1991 to 2020 by size buckets. Panel A details the allocation of investment assets, showing the shares allocated to cash & equivalents, government bonds, corporate bonds, equity, other investments, other investments (such as land, buildings, equipment, and mortgage loans), and other assets. Panel B reports the total net return of private foundations along with investment fees. Size groups are formed according to each private foundation's inflation-adjusted fair value of investment assets at the start of the year. Entries summarize data points across all years and size groupings, and report the number (N) of data points and mean value. All values in Panels A and B are in percentage points. The Internet Appendix provides detailed variable descriptions.

	Very Large		Large		Medium		Small		Very Small		Tiny	
	N	Mean	N	Mean	N	Mean	N	Mean	N	Mean	N	Mean
Panel A: Asset Allocation (%)												
Cash & Equivalents	3813	5.43	4146	6.63	36602	8.49	99746	8.94	69984	9.82	75595	15.77
Government Bonds	3813	6.65	4146	6.40	36602	7.01	99746	6.43	69984	5.78	75595	3.56
Corporate Bonds	3813	6.76	4146	8.13	36602	8.72	99746	9.95	69984	11.05	75595	11.85
Equity	3813	51.43	4146	51.41	36602	53.49	99746	57.02	69984	59.10	75595	51.22
Alternatives	3813	25.94	4146	24.35	36602	19.45	99746	15.07	69984	12.03	75595	16.14
Other Investments	3813	2.09	4146	1.50	36602	1.84	99746	1.90	69984	1.95	75595	1.36
Other Assets	3813	1.70	4146	1.57	36602	1.00	99746	0.68	69984	0.28	75595	0.10
Panel A: Net Return and Investment Fees (%)												
Net Investment Return	3813	9.76	4146	9.21	36602	8.69	99746	8.18	69984	7.89	75595	6.58
Investment Fees	3813	0.51	4146	0.52	36602	0.54	99746	0.59	69984	0.71	75595	0.91

Table IA.2: Reach for Yield of Private Foundations without Lagged Dep. Variable

This table reports OLS regression coefficients and standard errors for the relationship between the share of assets allocated to equity, other investments, or government bonds, interest rates, and private foundation characteristics. The dependent variable is the share of assets allocated to the specified asset class within each model. The interest rate used is the 10-Year Treasury Constant Maturity Rate at the end of the previous year. Independent variables include the logarithm of foundation total investment assets at the start of the year, investment fees, contribution rates (as a fraction of total adjusted assets), the logarithm of foundation age, the logarithm of one plus the number of paid staff over $50,000, the logarithm of one plus the number of unpaid staff members, and their missing indicators (untabulated). QD_{t-1} represents the ratio of qualified distributions to the distributable amount based on the 5% minimum spending rule, after all IRS-required adjustments. Detailed variable descriptions are available in the Internet Appendix. All continuous independent variables are winsorized at the 1% in both tails. Fund fixed effects are included, and standard errors are adjusted for double clustering by foundation organization and fiscal year. ***, **, * correspond to statistical significance at the 1%, 5%, and 10% level, respectively.

	Equity		Other Inv.		Gvt. Bonds	
	(1)	(2)	(3)	(4)	(5)	(6)
Panel A: Reach for Yield and Minimum Spending Rule						
Yield_{t-1}	-0.76***	-0.87***	-1.07***	-1.16***	1.69***	1.80***
	[0.24]	[0.24]	[0.15]	[0.16]	[0.17]	[0.17]
QD_{t-1}		-0.01***		-0.00***		0.00***
		[0.00]		[0.00]		[0.00]
$\text{Yield}_{t-1} \times QD_{t-1}$		0.06***		0.06***		-0.07***
		[0.02]		[0.02]		[0.01]
Other Controls	Yes	Yes	Yes	Yes	Yes	Yes
Fund Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Adj. R^2	0.62	0.62	0.60	0.60	0.55	0.55
Observations	277483	277483	277483	277483	277483	277483
Panel B: Reach for Yield by Large versus Small Foundations						
	$\geq$ 50M	$<$ 50M	$\geq$ 50M	$<$ 50M	$\geq$ 50M	$<$ 50M
Yield_{t-1}	1.27***	-1.51***	-3.45***	-0.50***	1.80***	1.76***
	[0.29]	[0.27]	[0.33]	[0.15]	[0.17]	[0.18]
QD_{t-1}	-0.00	-0.01***	-0.01***	-0.00**	0.00**	0.00***
	[0.00]	[0.00]	[0.00]	[0.00]	[0.00]	[0.00]
$\text{Yield}_{t-1} \times QD_{t-1}$	0.05	0.08***	0.19**	0.04**	-0.08*	-0.07***
	[0.06]	[0.02]	[0.08]	[0.02]	[0.04]	[0.01]
Other Controls	Yes	Yes	Yes	Yes	Yes	Yes
Fund Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Adj. R^2	0.65	0.63	0.69	0.59	0.59	0.56
Observations	41494	235327	41494	235327	41494	235327

Table IA.3: Reach for Yield of Private Foundations: Book Values

This table reports OLS regression coefficients and standard errors for the relationship between the share of assets allocated to equity, other investments, or government bonds, interest rates, and private foundation characteristics for a sample of foundations likely carrying assets at book value in Column (b) of Part II of Form 990-PF. The dependent variable is the share of assets allocated to the specified asset class within each model. The interest rate used is the 10-Year Treasury Constant Maturity Rate at the end of the previous year. Independent variables include the logarithm of foundation total investment assets at the start of the year, investment fees, contribution rates (as a fraction of total adjusted assets), the logarithm of foundation age, the logarithm of one plus the number of paid staff over $50,000, the logarithm of one plus the number of unpaid staff members, their missing indicators (untabulated), and the lagged dependent variable. QD_{t-1} represents the ratio of qualified distributions to the distributable amount based on the 5% minimum spending rule, after all IRS-required adjustments. Detailed variable descriptions are available in the Internet Appendix. All continuous independent variables are winsorized at the 1% in both tails. Fund fixed effects are included, and standard errors are adjusted for double clustering by foundation organization and fiscal year. ***, **, * correspond to statistical significance at the 1%, 5%, and 10% level, respectively.

	Equity		Other Inv.		Gvt. Bonds	
	(1)	(2)	(3)	(4)	(5)	(6)
Panel A: Reach for Yield and Minimum Spending Rule						
Yield_{t-1}	-0.83***	-0.92***	-0.54***	-0.57***	0.93***	0.99***
	[0.17]	[0.17]	[0.14]	[0.14]	[0.11]	[0.11]
QD_{t-1}		-0.00***		-0.00		0.00***
		[0.00]		[0.00]		[0.00]
$\text{Yield}_{t-1} \times \text{QD}_{t-1}$		0.05***		0.02*		-0.03***
		[0.01]		[0.01]		[0.01]
Other Controls	Yes	Yes	Yes	Yes	Yes	Yes
Fund Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Adj-R^2	0.78	0.78	0.76	0.76	0.75	0.75
Observations	107550	107550	107550	107550	107550	107550
Panel B: Reach for Yield by Large versus Small Foundations						
	$\geq$ 50M	$<$ 50M	$\geq$ 50M	$<$ 50M	$\geq$ 50M	$<$ 50M
Yield_{t-1}	-0.24	-1.07***	-1.33***	-0.41**	1.08***	0.97***
	[0.20]	[0.18]	[0.19]	[0.16]	[0.14]	[0.11]
QD_{t-1}	0.00	-0.00***	-0.01**	0.00	0.00	0.00***
	[0.00]	[0.00]	[0.00]	[0.00]	[0.00]	[0.00]
$\text{Yield}_{t-1} \times \text{QD}_{t-1}$	-0.00	0.06***	0.13**	0.01	-0.03	-0.03***
	[0.06]	[0.01]	[0.05]	[0.01]	[0.04]	[0.01]
Other Controls	Yes	Yes	Yes	Yes	Yes	Yes
Fund Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Adj-R^2	0.79	0.78	0.83	0.75	0.77	0.75
Observations	13532	93485	13532	93485	13532	93485

Table IA.4: Reach for Yield of Private Foundations: Alternate Asset Groups

This table reports OLS regression coefficients and standard errors for the relationship between the share of assets allocated to risky assets (equity, other investments, real estate, mortgages), bonds (corporate and government bonds), cash (cash and saving equivalents), interest rates, and private foundation characteristics. The dependent variable is the share of assets allocated to the specified asset class within each model. The interest rate used is the 10-Year Treasury Constant Maturity Rate at the end of the previous year. Independent variables include the logarithm of foundation total investment assets at the start of the year, investment fees, contribution rates (as a fraction of total adjusted assets), the logarithm of foundation age, the logarithm of one plus the number of paid staff over $50,000, the logarithm of one plus the number of unpaid staff members, their missing indicators (untabulated), and the lagged dependent variable. QD_{t-1} represents the ratio of qualified distributions to the distributable amount based on the 5% minimum spending rule, after all IRS-required adjustments. Detailed variable descriptions are available in the Internet Appendix. All continuous independent variables are winsorized at the 1% in both tails. Fund fixed effects are included, and standard errors are adjusted for double clustering by foundation organization and fiscal year. ***, **, * correspond to statistical significance at the 1%, 5%, and 10% level, respectively.

	Risky		Bonds		Cash	
	(1)	(2)	(3)	(4)	(5)	(6)
Panel A: Reach for Yield and Minimum Spending Rule						
Yield_{t-1}	-1.22***	-1.33***	1.00***	1.09***	0.20**	0.21**
	[0.14]	[0.15]	[0.13]	[0.13]	[0.09]	[0.09]
QD_{t-1}		-0.00***		0.00***		0.00**
		[0.00]		[0.00]		[0.00]
$\text{Yield}_{t-1} \times \text{QD}_{t-1}$		0.07***		-0.06***		-0.00
		[0.02]		[0.01]		[0.02]
Other Controls	Yes	Yes	Yes	Yes	Yes	Yes
Fund Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Adj. R^2	0.75	0.75	0.70	0.70	0.77	0.77
Observations	277483	277483	277483	277483	277483	277483
Panel B: Reach for Yield by Large versus Small Foundations						
	$\geq$ 50M	$<$ 50M	$\geq$ 50M	$<$ 50M	$\geq$ 50M	$<$ 50M
Yield_{t-1}	-1.22***	-1.39***	1.01***	1.11***	0.16*	0.25**
	[0.18]	[0.16]	[0.14]	[0.15]	[0.09]	[0.09]
QD_{t-1}	-0.00**	-0.00***	0.00***	0.00***	0.00	0.00**
	[0.00]	[0.00]	[0.00]	[0.00]	[0.00]	[0.00]
$\text{Yield}_{t-1} \times \text{QD}_{t-1}$	0.10*	0.06***	-0.10**	-0.06***	-0.02	-0.01
	[0.06]	[0.01]	[0.04]	[0.01]	[0.05]	[0.01]
Other Controls	Yes	Yes	Yes	Yes	Yes	Yes
Fund Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Adj. R^2	0.75	0.75	0.75	0.70	0.64	0.78
Observations	41494	235327	41494	235327	41494	235327

Table IA.5: Reach for Yield of Private Foundations: Drop High Alts.

This table reports OLS regression coefficients and standard errors for the relationship between the share of assets allocated to equity, other investments, or government bonds, interest rates, and private foundation characteristics for a sample of foundations with less than 75% of assets classified as other investments. The dependent variable is the share of assets allocated to the specified asset class within each model. The interest rate used is the 10-Year Treasury Constant Maturity Rate at the end of the previous year. Independent variables include the logarithm of foundation total investment assets at the start of the year, investment fees, contribution rates (as a fraction of total adjusted assets), the logarithm of foundation age, the logarithm of one plus the number of paid staff over $50,000, the logarithm of one plus the number of unpaid staff members, their missing indicators (untabulated), and the lagged dependent variable. QD_{t-1} represents the ratio of qualified distributions to the distributable amount based on the 5% minimum spending rule, after all IRS-required adjustments. Detailed variable descriptions are available in the Internet Appendix. All continuous independent variables are winsorized at the 1% in both tails. Fund fixed effects are included, and standard errors are adjusted for double clustering by foundation organization and fiscal year. ***, **, * correspond to statistical significance at the 1%, 5%, and 10% level, respectively.

	Equity		Other Inv.		Gvt. Bonds	
	(1)	(2)	(3)	(4)	(5)	(6)
Panel A: Reach for Yield and Minimum Spending Rule						
Yield_{t-1}	-0.70***	-0.77***	-0.74***	-0.81***	0.86***	0.91***
	[0.18]	[0.18]	[0.10]	[0.11]	[0.06]	[0.06]
QD_{t-1}		-0.00***		-0.00***		0.00***
		[0.00]		[0.00]		[0.00]
$\text{Yield}_{t-1} \times \text{QD}_{t-1}$		0.04***		0.05***		-0.03***
		[0.01]		[0.01]		[0.01]
Other Controls	Yes	Yes	Yes	Yes	Yes	Yes
Fund Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Adj. R^2	0.74	0.74	0.65	0.65	0.71	0.71
Observations	256065	256065	256065	256065	256065	256065
Panel B: Reach for Yield by Large versus Small Foundations						
	$\geq$ 50M	< 50M	$\geq$ 50M	< 50M	$\geq$ 50M	< 50M
Yield_{t-1}	-0.04	-1.03***	-1.41***	-0.57***	0.86***	0.93***
	[0.21]	[0.20]	[0.13]	[0.12]	[0.08]	[0.06]
QD_{t-1}	-0.00	-0.00***	-0.01***	-0.00***	0.00*	0.00***
	[0.00]	[0.00]	[0.00]	[0.00]	[0.00]	[0.00]
$\text{Yield}_{t-1} \times \text{QD}_{t-1}$	0.04	0.05***	0.15***	0.04***	-0.05	-0.04***
	[0.05]	[0.01]	[0.03]	[0.01]	[0.04]	[0.01]
Other Controls	Yes	Yes	Yes	Yes	Yes	Yes
Fund Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Adj. R^2	0.76	0.74	0.76	0.63	0.73	0.71
Observations	37739	217663	37739	217663	37739	217663

Table IA.6: Reach for Yield of Private Foundations

This table reports OLS regression coefficients and standard errors for the relationship between the share of assets allocated to equity, other investments, or government bonds, interest rates, and characteristics of private foundations. The dependent variable is the share of assets allocated to the asset class specified within each model. The interest rate used is the 10-Year Treasury Constant Maturity Rate at the end of the previous year. Independent variables include the logarithm of foundation total investment assets at the start of the year, investment fees, contribution rates (as a fraction of total adjusted assets), the logarithm of foundation age, the logarithm of one plus the number of paid staff over $50,000, the logarithm of one plus the number of unpaid staff members, their missing indicators (untabulated), and the lagged dependent variable. QD_{t-1} represents the ratio of qualified distributions to the distributable amount based on the 5% minimum spending rule, after all IRS-required adjustments. $\frac{\text{DY}}{\text{Distr.}_{t-1}}$ is the ratio of a foundation's dividend yield to its distributions. Detailed variable descriptions are available in the Internet Appendix. All continuous independent variables are winsorized at the 1% in both tails. Fund fixed effects are included, and standard errors are adjusted for double clustering by foundation organization and fiscal year. ***, **, * correspond to statistical significance at the 1%, 5%, and 10% level, respectively.

	Equity		Other Inv.		Gvt. Bonds	
	(1)	(2)	(3)	(4)	(5)	(6)
Yield_{t-1}	-0.24	-0.61***	-1.35***	-0.63***	1.46***	0.71***
	[0.23]	[0.20]	[0.17]	[0.13]	[0.15]	[0.06]
QD_{t-1}	-0.01***	-0.00***	-0.00***	-0.00***	0.00***	0.00***
	[0.00]	[0.00]	[0.00]	[0.00]	[0.00]	[0.00]
$\text{Yield}_{t-1} \times \text{QD}_{t-1}$	0.04**	0.03**	0.07***	0.03***	-0.07***	-0.03***
	[0.02]	[0.01]	[0.02]	[0.01]	[0.01]	[0.01]
$\frac{\text{DY}}{\text{Distr.}_{t-1}}$	0.01***	0.00*	-0.01***	-0.01**	-0.00**	-0.00*
	[0.00]	[0.00]	[0.00]	[0.00]	[0.00]	[0.00]
$\text{Yield}_{t-1} \times \frac{\text{DY}}{\text{Distr.}_{t-1}}$	-0.50***	-0.12**	0.25***	0.07	0.22***	0.10***
	[0.08]	[0.05]	[0.07]	[0.05]	[0.04]	[0.03]
$\text{QD}_{t-1} \times \frac{\text{DY}}{\text{Distr.}_{t-1}}$	0.01**	0.00	-0.00	0.00	-0.01*	-0.00**
	[0.00]	[0.00]	[0.00]	[0.00]	[0.00]	[0.00]
$\text{Yield}_{t-1} \times \text{QD}_{t-1} \times \frac{\text{DY}}{\text{Distr.}_{t-1}}$	-0.31**	-0.06	0.04	-0.01	0.21**	0.08**
	[0.13]	[0.05]	[0.03]	[0.03]	[0.10]	[0.04]
Lagged Y	No	Yes	No	Yes	No	Yes
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Fund Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Adj-R^2	0.63	0.73	0.60	0.70	0.56	0.70
Observations	277483	277483	277483	277483	277483	277483

Table IA.7: Risk-adjusted Returns of Private Foundations: Time Periods

This table reports risk-adjusted alpha estimate for private foundations by size bucket and across all foundations over the 1991–2007 and 2008–2020 periods. The table reports median, equal-weighted ($\bar{\alpha}^{EW}$), and value-weighted ($\bar{\alpha}^{VW}$) average alphas for foundations with at least seven years of valid returns data. Bootstrapped *p*-values are computed following the methodology of Kosowski et al. (2006). Size groups are defined by each foundation's average inflation-adjusted fair value of total investment assets at the beginning of the year in each sub-period: Very large (AUM > \$500 million), large (\$250–\$500 million), medium-large (\$50–\$250 million), medium-small (\$10–\$50 million), small (\$1–\$10 million), and tiny (AUM < \$1 million). Factors in Panel A include excess returns of U.S. equity (Russell 3000) and U.S. corporate bonds (Bloomberg U.S. Aggregate Bond). Panel B also includes international equity (MSCI ACWI ex-U.S.), and hedge funds (HFRI Fund-Weighted Composite).

		All	V-Large	Large	M-Large	M-Small	Small	Tiny
Panel A: Equity and Fixed-Income Factor Model								
	Median	0.53	2.25	2.18	1.12	0.66	0.03	-0.17
		(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.19)	(0.00)
1991-2007	$\bar{\alpha}^{\text{EW}}$	1.24	2.99	2.79	1.99	1.47	0.54	0.33
		(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.01)
	$\bar{\alpha}^{\text{VW}}$	3.06	4.12	2.89	1.97	1.45	0.60	0.45
		(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.01)
	Median	-2.46	-0.93	-1.39	-1.48	-1.69	-2.75	-3.57
		(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
2008-2020	$\bar{\alpha}^{\text{EW}}$	-1.91	-0.20	-0.37	-0.68	-1.00	-2.24	-3.20
		(0.00)	(0.21)	(0.07)	(0.00)	(0.00)	(0.00)	(0.00)
	$\bar{\alpha}^{\text{VW}}$	-0.26	0.31	-0.45	-0.67	-0.94	-2.02	-3.13
		(0.00)	(0.25)	(0.04)	(0.00)	(0.00)	(0.00)	(0.00)
Panel B: Baseline Four-Factor Model								
	Median	0.54	0.97	1.03	0.78	0.69	0.50	-0.54
		(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
1991-2007	$\bar{\alpha}^{\text{EW}}$	1.15	0.99	0.99	1.44	1.32	1.12	0.16
		(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.20)
	$\bar{\alpha}^{\text{VW}}$	1.27	1.17	1.06	1.54	1.28	1.31	0.32
		(0.00)	(0.32)	(0.00)	(0.00)	(0.00)	(0.00)	(0.07)
	Median	-1.12	0.19	0.04	-0.42	-0.68	-1.30	-1.57
		(0.00)	(0.09)	(0.34)	(0.00)	(0.00)	(0.00)	(0.00)
2008-2020	$\bar{\alpha}^{\text{EW}}$	-0.62	0.76	0.96	0.51	-0.11	-1.00	-1.41
		(0.00)	(0.00)	(0.00)	(0.00)	(0.01)	(0.00)	(0.00)
	$\bar{\alpha}^{\text{VW}}$	0.81	1.32	0.91	0.51	-0.06	-0.88	-1.32
		(0.00)	(0.00)	(0.00)	(0.00)	(0.16)	(0.00)	(0.00)

Table IA.8: Risk-adjusted Returns of Private Foundations: Portfolio Approach

This table reports risk-adjusted alpha estimates within a portfolio of foundations in the same size-bucket and overall by grouping foundations into portfolios based on size and reporting month. The table reports the results of time-series regressions of the equal- and value-weighted return of private foundations on a number of risk factors. Foundations are sorted into portfolios based on beginning-of-year value of inflation-adjusted investment assets: Very large (AUM > \$500 million), large (\$250–\$500 million), medium-large (\$50–\$250 million), medium-small (\$10–\$50 million), small (\$1–\$10 million), and tiny (AUM < \$1 million). Parameter estimates are obtained by regressing annual excess returns on annual risk factors. These factors include the excess return of U.S. equity (Russell 3000), U.S. corporate bonds (Bloomberg U.S. Aggregate Bond), international equity (MSCI ACWI ex-U.S.), and hedge funds (HFRI Fund-Weighted Composite). Regressions are weighted by the number of foundations reporting in each fiscal year-month combinations. The observation level is monthly. The brackets report p-values following Newey and West (1994).

	All	Very Large	Large	Medium	Small	Very Small	Tiny
α^{EW} (%)	0.08	0.71	0.57	0.32	0.37	-0.52	-1.15
	(0.78)	(0.10)	(0.02)	(0.17)	(0.12)	(0.05)	(0.00)
α^{VW} (%)	0.63	1.16	0.60	0.31	0.26	-0.51	-1.21
	(0.10)	(0.06)	(0.02)	(0.20)	(0.28)	(0.05)	(0.00)
Observations	360	298	291	360	360	360	360

Table IA.9: Performance Attribution

This table reports coefficient estimates and standard errors (in square brackets) from a style-attribution model with weights constrained to be greater than 0 and to sum to 1, following Sharpe (1992). Size groups are defined by each foundation's average beginning-of-year inflation-adjusted fair value of total investment assets: Very large (AUM > $500 million), large ($250–$500 million), medium-large ($50–$250 million), medium-small ($10–$50 million), small ($1–$10 million), and tiny (AUM < $1 million). Benchmark asset classes include the total returns of U.S. equity (Russell 3000), U.S. corporate bonds (Bloomberg U.S. Aggregate Bond), international equity (MSCI ACWI ex-U.S.), and hedge funds (HFRI Fund-Weighted Composite). The Internet Appendix provides detailed variable descriptions. ***, **, * correspond to statistical significance at the 1%, 5%, and 10% level, respectively.

Panel A: Performance Attribution CPI Adj. Assets > $50 million									
	Very Large			Large			Medium		
Russell 3000	0.58***	0.44***	0.41***	0.59***	0.44***	0.40***	0.55***	0.44***	0.41***
	[0.01]	[0.02]	[0.02]	[0.01]	[0.01]	[0.01]	[0.00]	[0.01]	[0.01]
BB Aggregate	0.42***	0.41***	0.31***	0.41***	0.40***	0.29***	0.45***	0.44***	0.37***
	[0.01]	[0.01]	[0.02]	[0.01]	[0.01]	[0.01]	[0.00]	[0.00]	[0.01]
ACWI ex-US		0.15***	0.09***		0.16***	0.10***		0.12***	0.08***
		[0.01]	[0.01]		[0.01]	[0.01]		[0.00]	[0.01]
HFRI Fund-Weighted			0.19***			0.20***			0.13***
			[0.02]			[0.02]			[0.01]
Alpha (bp)	0.24	0.75***	0.44**	-0.15	0.39**	0.11	-0.35***	0.06	-0.07
	[0.17]	[0.17]	[0.18]	[0.16]	[0.16]	[0.16]	[0.06]	[0.06]	[0.06]
RMSE	0.098	0.097	0.096	0.095	0.093	0.092	0.101	0.100	0.099
Observations	3813	3813	3813	4146	4146	4146	36602	36602	36602
Panel B: Performance Attribution CPI Adj. Assets < $50 million									
	Small			Very Small			Tiny		
Russell 3000	0.54***	0.44***	0.43***	0.55***	0.44***	0.43***	0.53***	0.36***	0.37***
	[0.00]	[0.00]	[0.00]	[0.00]	[0.00]	[0.00]	[0.00]	[0.00]	[0.00]
BB Aggregate	0.46***	0.45***	0.40***	0.45***	0.44***	0.42***	0.47***	0.47***	0.49***
	[0.00]	[0.00]	[0.00]	[0.00]	[0.00]	[0.00]	[0.00]	[0.00]	[0.00]
ACWI ex-US		0.10***	0.08***		0.12***	0.11***		0.17***	0.18***
		[0.00]	[0.00]		[0.00]	[0.00]		[0.00]	[0.00]
HFRI Fund-Weighted			0.10***			0.03***			-0.04***
			[0.01]			[0.01]			[0.01]
Alpha (bp)	-0.87***	-0.47***	-0.52***	-1.63***	-1.11***	-1.13***	-2.73***	-1.99***	-2.01***
	[0.03]	[0.03]	[0.03]	[0.04]	[0.04]	[0.04]	[0.03]	[0.03]	[0.03]
RMSE	0.091	0.090	0.090	0.085	0.084	0.084	0.077	0.075	0.075
Observations	99746	99746	99746	69984	69984	69984	75595	75595	75595

Table IA.10: Risk-adjusted Returns of Private Foundations: Robustness I

This table reports risk-adjusted alpha estimates and p-values for private foundations by size bucket and across all foundations. The table reports median, equal-weighted ($\bar{\alpha}^{EW}$), and value-weighted ($\bar{\alpha}^{VW}$) average alphas for foundations with at least seven years of valid returns data. Bootstrapped p-values are computed following the methodology of Kosowski et al. (2006). Size groups are defined by each foundation's average inflation-adjusted fair value of total investment assets at the beginning of the year: Very large (AUM > \$500 million), large (\$250–\$500 million), medium-large (\$50–\$250 million), medium-small (\$10–\$50 million), small (\$1–\$10 million), and tiny (AUM < \$1 million). Factors include excess returns of U.S. equity (Russell 3000), U.S. corporate bonds (Bloomberg U.S. Aggregate Bond), international equity (MSCI ACWI ex-U.S.), and hedge funds (HFRI Fund-Weighted Composite). Panel A excludes operating foundations. Panel B excludes foundations with a fiscal year-end other than December. Panel C only includes foundations with at least 30 years of annual returns.

	All	V-Large	Large	M-Large	M-Small	Small	Tiny
Panel A: Exclude Operating Foundations							
Median	-1.09	0.70	-0.02	-0.27	-0.52	-1.25	-1.76
	(0.00)	(0.00)	(0.42)	(0.00)	(0.00)	(0.00)	(0.00)
$\bar{\alpha}^{\mathrm{EW}}$	-0.51	1.00	0.94	0.82	0.10	-0.81	-1.55
	(0.00)	(0.00)	(0.00)	(0.00)	(0.03)	(0.00)	(0.00)
$\bar{\alpha}^{\mathrm{VW}}$	1.15	1.92	0.85	0.86	0.13	-0.64	-1.43
	(0.00)	(0.00)	(0.00)	(0.00)	(0.01)	(0.00)	(0.00)
Panel B: Foundations with 12/31 FYE							
Median	-1.09	0.75	0.03	-0.25	-0.59	-1.30	-1.74
	(0.00)	(0.00)	(0.37)	(0.00)	(0.00)	(0.00)	(0.00)
$\bar{\alpha}^{\mathrm{EW}}$	-0.53	1.26	0.85	0.61	0.03	-0.81	-1.49
	(0.00)	(0.00)	(0.00)	(0.00)	(0.34)	(0.00)	(0.00)
$\bar{\alpha}^{\mathrm{VW}}$	1.21	2.06	0.71	0.69	0.07	-0.64	-1.38
	(0.00)	(0.00)	(0.01)	(0.00)	(0.12)	(0.00)	(0.00)
Panel C: 30 Observations							
Median	-0.63	0.77	-0.10	-0.60	-0.61	-0.90	-1.41
	(0.00)	(0.00)	(0.34)	(0.00)	(0.00)	(0.00)	(0.00)
$\bar{\alpha}^{\mathrm{EW}}$	-0.28	0.86	0.61	-0.09	-0.51	-0.71	-0.97
	(0.00)	(0.00)	(0.01)	(0.17)	(0.00)	(0.00)	(0.01)
$\bar{\alpha}^{\mathrm{VW}}$	0.81	1.26	0.58	-0.04	-0.46	-0.75	-1.06
	(0.00)	(0.00)	(0.01)	(0.36)	(0.00)	(0.00)	(0.02)

Table IA.11: Risk-adjusted Returns of Private Foundations: Robustness II

This table reports risk-adjusted alpha estimates and p-values for private foundations by size bucket and across all foundations. The table reports median, equal-weighted ($\bar{\alpha}^{EW}$), and value-weighted ($\bar{\alpha}^{VW}$) average alphas for foundations with at least seven years of valid returns data. Bootstrapped p-values are computed following the methodology of Kosowski et al. (2006). Size groups are defined by each foundation's average inflation-adjusted fair value of total investment assets at the beginning of the year: Very large (AUM > \$500 million), large (\$250–\$500 million), medium-large (\$50–\$250 million), medium-small (\$10–\$50 million), small (\$1–\$10 million), and tiny (AUM < \$1 million). Factors include excess returns of U.S. equity (Russell 3000), U.S. corporate bonds (Bloomberg U.S. Aggregate Bond), international equity (MSCI ACWI ex-U.S.), and hedge funds (HFRI Fund-Weighted Composite). Panel A accounts for the actual timing of non-cash gifts. Panel B uses net returns calculated without adjusting for half of the distributions in the denominator of Equation 1. Panel C groups foundations into size buckets based on their average beginning-of-year inflation-adjusted investment assets in their first three years.

	All	V-Large	Large	M-Large	M-Small	Small	Tiny
Panel A: Account for Gift Timing							
Median	-1.07	0.75	0.00	-0.24	-0.50	-1.25	-1.76
	(0.00)	(0.00)	(0.49)	(0.00)	(0.00)	(0.00)	(0.00)
$\bar{\alpha}^{\text{EW}}$	-0.48	1.07	0.88	0.89	0.13	-0.81	-1.51
	(0.00)	(0.00)	(0.00)	(0.00)	(0.01)	(0.00)	(0.00)
$\bar{\alpha}^{\text{VW}}$	1.18	1.95	0.79	0.94	0.16	-0.63	-1.42
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Panel B: No Outflow Adjustment							
Median	-1.09	0.64	-0.08	-0.31	-0.56	-1.25	-1.75
	(0.00)	(0.00)	(0.29)	(0.00)	(0.00)	(0.00)	(0.00)
$\bar{\alpha}^{\text{EW}}$	-0.55	0.96	0.76	0.73	0.02	-0.87	-1.52
	(0.00)	(0.00)	(0.00)	(0.00)	(0.31)	(0.00)	(0.00)
$\bar{\alpha}^{\text{VW}}$	1.06	1.86	0.68	0.77	0.05	-0.71	-1.42
	(0.00)	(0.00)	(0.00)	(0.00)	(0.15)	(0.00)	(0.00)
Panel C: Investment Assets in Initial Years							
Median	-1.07	0.07	-0.06	-0.43	-0.44	-1.24	-1.70
	(0.00)	(0.31)	(0.35)	(0.00)	(0.00)	(0.00)	(0.00)
$\bar{\alpha}^{\text{EW}}$	-0.48	0.14	0.10	0.60	0.23	-0.75	-1.40
	(0.00)	(0.25)	(0.33)	(0.00)	(0.00)	(0.00)	(0.00)
$\bar{\alpha}^{\text{VW}}$	0.58	1.12	0.16	0.55	0.25	-0.57	-1.37
	(0.00)	(0.00)	(0.25)	(0.00)	(0.00)	(0.00)	(0.00)

Table IA.12: Risk-adjusted Returns of Private Foundations: Robustness III

This table reports risk-adjusted alpha estimates and p-values for private foundations by size bucket and across all foundations. The table reports median, equal-weighted ($\bar{\alpha}^{EW}$), and value-weighted ($\bar{\alpha}^{VW}$) average alphas for foundations with at least seven years of valid returns data. Bootstrapped p-values are computed following the methodology of Kosowski et al. (2006). Size groups are defined by each foundation's average inflation-adjusted fair value of total investment assets at the beginning of the year: Very large (AUM > \$500 million), large (\$250–\$500 million), medium-large (\$50–\$250 million), medium-small (\$10–\$50 million), small (\$1–\$10 million), and tiny (AUM < \$1 million). Factors include excess returns of U.S. equity (Russell 3000), U.S. corporate bonds (Bloomberg U.S. Aggregate Bond), international equity (MSCI ACWI ex-U.S.), and hedge funds (HFRI Fund-Weighted Composite). Panel A only includes foundations using accrual accounting. Panel B excludes foundations that changed their fiscal year at least once. Panel C adjusts net returns by replacing fair value (column (c)) with reported cost (column (b)) for certain illiquid assets. All other assets, including cash, savings, equities, bonds, and non-traditional assets, remain at fair value.

	All	V-Large	Large	M-Large	M-Small	Small	Tiny
Panel A: Accruals Only							
Median	-0.40	0.41	-0.12	-0.39	-0.35	-0.87	-1.59
	(0.00)	(0.00)	(0.23)	(0.00)	(0.00)	(0.00)	(0.00)
$\bar{\alpha}^{\text{EW}}$	0.24	0.97	0.15	0.28	0.46	-0.31	-1.31
	(0.00)	(0.00)	(0.32)	(0.03)	(0.00)	(0.08)	(0.00)
$\bar{\alpha}^{\text{VW}}$	1.42	1.99	0.21	0.42	0.33	0.03	-0.99
	(0.00)	(0.00)	(0.26)	(0.00)	(0.00)	(0.47)	(0.02)
Panel B: Never Changed Accounting Basis							
Median	-1.10	0.40	0.38	-0.19	-0.49	-1.25	-1.75
	(0.00)	(0.01)	(0.01)	(0.00)	(0.00)	(0.00)	(0.00)
$\bar{\alpha}^{\text{EW}}$	-0.56	0.81	1.43	0.75	0.11	-0.82	-1.54
	(0.00)	(0.00)	(0.00)	(0.00)	(0.03)	(0.00)	(0.00)
$\bar{\alpha}^{\text{VW}}$	0.85	1.29	1.35	0.91	0.13	-0.64	-1.40
	(0.00)	(0.00)	(0.00)	(0.00)	(0.01)	(0.00)	(0.00)
Panel C: Adjusted Return							
Median	-1.03	0.76	-0.01	-0.20	-0.49	-1.21	-1.66
	(0.00)	(0.00)	(0.48)	(0.00)	(0.00)	(0.00)	(0.00)
$\bar{\alpha}^{\text{EW}}$	-0.48	0.94	0.83	0.72	0.09	-0.75	-1.45
	(0.00)	(0.00)	(0.00)	(0.00)	(0.04)	(0.00)	(0.00)
$\bar{\alpha}^{\text{VW}}$	1.10	1.88	0.74	0.79	0.12	-0.60	-1.37
	(0.00)	(0.00)	(0.00)	(0.00)	(0.01)	(0.00)	(0.00)

Table IA.13: Risk-Adjusted Returns of Private Foundations: Other Practices

This table reports risk-adjusted alpha estimates and p-values for private foundations by size bucket and across all foundations. The table reports median, equal-weighted ($\bar{\alpha}^{EW}$), and value-weighted ($\bar{\alpha}^{VW}$) average alphas for foundations with at least seven years of valid returns data. Bootstrapped p-values are computed following the methodology of Kosowski et al. (2006). Size groups are defined by each foundation's average inflation-adjusted fair value of total investment assets at the beginning of the year: Very large (AUM > \$500 million), large (\$250–\$500 million), medium-large (\$50–\$250 million), medium-small (\$10–\$50 million), small (\$1–\$10 million), and tiny (AUM < \$1 million). Factors include excess returns of U.S. equity (Russell 3000), U.S. corporate bonds (Bloomberg U.S. Aggregate Bond), international equity (MSCI ACWI ex-U.S.), and hedge funds (HFRI Fund-Weighted Composite). Panel A excludes foundations that have identical government or corporate bond fair market value allocations year-over-year at least once during the sample period. Panel B excludes foundations that have identical other investment fair market value allocations year-over-year at least once during the sample period, or foundations that never decreased their alternative investment balances over the sample period.

	All	Very Large	Large	M-Large	M-Small	Small	Tiny
Panel A: Bonds at Cost							
Median	-1.09	0.72	-0.01	-0.24	-0.53	-1.25	-1.77
	(0.00)	(0.00)	(0.48)	(0.00)	(0.00)	(0.00)	(0.00)
$\bar{\alpha}^{EW}$	-0.52	0.96	0.89	0.90	0.09	-0.81	-1.56
	(0.00)	(0.00)	(0.00)	(0.00)	(0.05)	(0.00)	(0.00)
$\bar{\alpha}^{VW}$	1.17	1.92	0.80	0.95	0.12	-0.64	-1.46
	(0.00)	(0.00)	(0.00)	(0.00)	(0.01)	(0.00)	(0.00)
Panel B: Highwatermarking							
Median	-1.11	0.76	-0.02	-0.27	-0.54	-1.25	-1.76
	(0.00)	(0.00)	(0.48)	(0.00)	(0.00)	(0.00)	(0.00)
$\bar{\alpha}^{EW}$	-0.55	0.91	0.68	0.79	0.08	-0.80	-1.54
	(0.00)	(0.00)	(0.00)	(0.00)	(0.08)	(0.00)	(0.00)
$\bar{\alpha}^{VW}$	1.02	1.75	0.63	0.80	0.14	-0.60	-1.45
	(0.00)	(0.00)	(0.00)	(0.00)	(0.01)	(0.00)	(0.00)

Table IA.14: Risk-Adjusted Returns of Private Foundations: Exposure to PE

This table reports risk-adjusted alpha estimates and p-values for private foundations by size bucket and across all foundations. The table reports median, equal-weighted ($\bar{\alpha}^{EW}$), and value-weighted ($\bar{\alpha}^{VW}$) average alphas for foundations with at least seven years of valid returns data. Bootstrapped p-values are computed following the methodology of Kosowski et al. (2006). Size groups are defined by each foundation's average inflation-adjusted fair value of total investment assets at the beginning of the year: Very large (AUM > \$500 million), large (\$250–\$500 million), medium-large (\$50–\$250 million), medium-small (\$10–\$50 million), small (\$1–\$10 million), and tiny (AUM < \$1 million). Factors include excess returns of U.S. equity (Russell 3000), U.S. corporate bonds (Bloomberg U.S. Aggregate Bond), international equity (MSCI ACWI ex-U.S.), and hedge funds (HFRI Fund-Weighted Composite). Panel A includes Fama and French (1993), Carhart (1997), and Pástor and Stambaugh (2003) factors. Panel B includes our baseline factors along with Pástor and Stambaugh (2003) liquidity factor. Panel C includes our baseline factors along with the one-quarter lagged excess returns of U.S. equity. Panel D includes our baseline factors along with the Cambridge Associates Private Equity U.S. pooled horizon IRR index.

	All	Very Large	Large	M-Large	M-Small	Small	Tiny
Panel A: FF4 + Liquidity							
Median	-0.64	0.23	-0.19	0.08	-0.18	-0.79	-1.22
	(0.00)	(0.04)	(0.04)	(0.01)	(0.00)	(0.00)	(0.00)
$\bar{\alpha}^{EW}$	-0.23	0.42	0.96	0.65	0.20	-0.43	-0.96
	(0.00)	(0.02)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
$\bar{\alpha}^{VW}$	0.86	1.26	0.89	0.76	0.24	-0.30	-1.00
	(0.00)	(0.01)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Panel B: Baseline + Liquidity							
Median	-1.06	0.42	-0.08	-0.21	-0.46	-1.23	-1.70
	(0.00)	(0.00)	(0.21)	(0.00)	(0.00)	(0.00)	(0.00)
$\bar{\alpha}^{EW}$	-0.46	0.94	0.92	0.79	0.22	-0.85	-1.50
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
$\bar{\alpha}^{VW}$	1.03	1.57	0.85	0.92	0.25	-0.74	-1.37
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Panel C: Baseline + C|A PE							
Median	-0.93	-0.13	-0.16	-0.25	-0.24	-1.16	-1.62
	(0.00)	(0.26)	(0.11)	(0.00)	(0.00)	(0.00)	(0.00)
$\bar{\alpha}^{EW}$	-0.35	0.43	0.85	0.81	0.38	-0.79	-1.35
	(0.00)	(0.72)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
$\bar{\alpha}^{VW}$	0.70	0.90	0.73	0.72	0.36	-0.69	-1.41
	(0.00)	(0.06)	(0.01)	(0.00)	(0.00)	(0.00)	(0.00)
Panel D: Baseline + 1Q-Lag Russell 3000							
Median	-1.11	0.55	-0.14	-0.36	-0.59	-1.26	-1.78
	(0.00)	(0.00)	(0.13)	(0.00)	(0.00)	(0.00)	(0.00)
$\bar{\alpha}^{EW}$	-0.58	1.00	0.49	0.60	-0.02	-0.84	-1.52
	(0.00)	(0.00)	(0.01)	(0.00)	(0.34)	(0.00)	(0.00)
$\bar{\alpha}^{VW}$	0.85	1.52	0.37	0.65	0.05	-0.69	-1.42
	(0.00)	(0.00)	(0.05)	(0.00)	(0.17)	(0.00)	(0.00)

Table IA.15: Fund Performance by LP Type

This table reports OLS regression coefficients and standard errors for the relationship between a fund's Total Value to Paid in (TVPI) and the type of LP. The dependent variable is the fund TVPI as of Q2-2024. Independent variables include indicator variables for whether a commitment was made by the specified LP type, the natural logarithm of fund size, and the natural logarithm of the number of investment made by an LP prior to the current commitment. Other LP types are not reported for brevity. Public pension funds are the omitted category in the regressions. Vintage year times fund type, and LP country fixed effects are included. Risk controls include additional fixed effects for the fund's preferred geography and industry. Standard errors are adjusted for clustering at the fund level. ***, **, * correspond to statistical significance at the 1%, 5%, and 10% level, respectively. The Internet Appendix provides detailed variable and data description.

	Full: 1991-2018			**1991-1998**			**1999-2006**			**2007-2018**		
	All	PE	VC	All	PE	VC	All	PE	VC	All	PE	VC
Universities	0.19***	0.06*	0.41***	1.06***	0.04	1.81***	0.04	0.07*	0.01	0.10**	0.06	0.23**
	[0.05]	[0.03]	[0.13]	[0.38]	[0.09]	[0.60]	[0.04]	[0.04]	[0.07]	[0.04]	[0.04]	[0.09]
Private Foundations	0.08***	0.02	0.24***	0.39**	0.06	0.82*	0.04	0.02	0.05	0.06*	0.02	0.18*
	[0.03]	[0.02]	[0.08]	[0.18]	[0.07]	[0.49]	[0.04]	[0.03]	[0.09]	[0.03]	[0.03]	[0.09]
Nonprofit Charities	0.04	-0.01	0.17*	0.11	0.07	-0.06	0.05	0.01	0.09	0.02	-0.02	0.14
	[0.04]	[0.04]	[0.10]	[0.23]	[0.11]	[0.62]	[0.04]	[0.04]	[0.08]	[0.06]	[0.06]	[0.15]
Other LPs	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vintage × Fund Type	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
LP Country	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Risk Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Adj. R^2	0.19	0.12	0.24	0.26	0.37	0.28	0.14	0.08	0.10	0.13	0.11	0.11
Observations	57923	44542	13369	5457	3886	1565	20216	14459	5750	32230	26178	6043

Table IA.16: Fund Performance by LP Type

This table reports OLS regression coefficients and standard errors for the relationship between a fund's excess IRR and the type of LP. The dependent variable is the fund IRR in excess of the average IRR of fund in the same vintage year, geography, and size bucket as defined by PitchBook as of Q2-2024. Independent variables include indicator variables if a commitment was made by the specified LP type, the natural logarithm of fund size, and the natural logarithm of the number of investment made by an LP prior to the current commitment. Other LP types are not reported for brevity. Public pension funds are the omitted category in the regressions. Vintage year times fund type, and LP country fixed effects are included. Risk controls include additional fixed effects for the fund's preferred geography and industry. Standard errors are adjusted for clustering at the fund level. ***, **, * correspond to statistical significance at the 1%, 5%, and 10% level, respectively. The Internet Appendix provides detailed variable and data description.

	Full: 1991-2018			**1991-1998**			**1999-2006**			**2007-2018**		
	All	PE	VC	All	PE	VC	All	PE	VC	All	PE	VC
Universities	1.67**	0.18	4.20**	12.55**	-0.25	24.69**	-0.29	-0.14	-0.64	0.21	0.43	0.06
	[0.80]	[0.42]	[1.93]	[5.31]	[1.70]	[9.50]	[0.61]	[0.65]	[0.95]	[0.46]	[0.54]	[0.89]
Private Foundations	1.56***	0.68*	3.92***	8.70***	2.61**	18.01***	0.99	0.08	2.41	0.51	0.60	0.33
	[0.43]	[0.36]	[1.21]	[2.59]	[1.16]	[6.70]	[0.76]	[0.77]	[1.63]	[0.41]	[0.43]	[0.96]
Nonprofit Charities	0.63	-0.09	2.49	0.93	-0.90	2.15	0.63	0.35	0.62	0.01	-0.44	1.15
	[0.71]	[0.59]	[1.78]	[6.61]	[1.87]	[19.14]	[0.80]	[0.92]	[1.42]	[0.76]	[0.88]	[1.39]
Other LPs	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vintage × Fund Type	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
LP Country	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Risk Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Adj. R^2	0.08	0.04	0.11	0.15	0.08	0.16	0.04	0.07	0.03	0.04	0.04	0.06
Observations	53741	40828	12900	5666	3976	1688	18815	13158	5651	29235	23668	5554

Table IA.17: Reinvestment Decisions by LPs

This table reports the average returns of funds based on whether an LP decides to reinvest in a follow-on fund within the same family raised by a given GP. The top row for each LP type corresponds to a fund that was reinvested while the second row represents one where the LP did not reinvest. *# Obs.* reports the number of fund observations that were re-invested or not re-invested. *Current* IRR^{Exc} represents the excess IRR of the current fund's IRR above its benchmark and *Next* IRR^{Exc} represents the excess IRR of the follow-on fund's IRR above its benchmark. Sample periods are split based on the vintage year of the initial fund. *Diff* is the difference in means across the reinvested and non-reinvested follow-on funds where statistical significance is determined by regressing each performance measure on whether the LP *reinvested* with standard errors clustered at the fund level. LP types include universities (*Univ.*), private foundations (*PF*), and other *Other* include LP's such as advisors, corporate pension funds, insurance companies, investment firms, nonprofit charities, other investors, and public pension funds. Panel A describes the means combined across both venture capital and private equity, Panel B is venture capital, and Panel C is private equity.***, **, * correspond to statistical significance at the 1%, 5%, and 10% level, respectively.

Panel A: Combined Performance: PE & VC

	Full Sample (1991-2018)			1991-1998			1999-2006			2007-2018		
	# Obs.	Current IRR^{Exc}	Next IRR^{Exc}	# Obs.	Current IRR^{Exc}	Next IRR^{Exc}	# Obs.	Current IRR^{Exc}	Next IRR^{Exc}	# Obs.	Current IRR^{Exc}	Next IRR^{Exc}
Univ.	710	5.29	3.08	146	20.94	12.20	304	0.74	0.96	260	1.81	0.43
	670	3.67	2.06	77	26.18	11.60	259	-0.43	0.12	334	1.66	1.36
Diff		1.62	1.02		-5.24	0.60		1.17	0.84		0.15	-0.93
PF	1581	4.75	2.13	190	20.54	9.74	754	3.58	1.10	637	1.42	1.07
	2049	0.83	1.24	190	7.20	10.32	816	-0.08	0.28	1043	0.39	0.33
Diff		3.92***	0.89		13.34***	-0.58		3.66*	0.82		1.03*	0.74
Other	13328	3.46	1.70	2207	7.84	5.96	5706	2.97	0.88	5415	2.19	0.82
	14794	1.84	1.50	1713	5.31	6.01	5754	1.33	0.29	7327	1.43	1.40
Diff		1.62***	0.20		2.53	-0.05		1.64***	0.59		0.76**	-0.58

(Continued on next page)

Table (*continued*)

Panel B: Venture Capital

	Full Sample (1991-2018)			1991-1998			1999-2006			2007-2018		
	# Obs.	Current IRR^{Exc}	Next IRR^{Exc}	# Obs.	Current IRR^{Exc}	Next IRR^{Exc}	# Obs.	Current IRR^{Exc}	Next IRR^{Exc}	# Obs.	Current IRR^{Exc}	Next IRR^{Exc}
Univ.	324	10.15	5.47	92	32.98	17.64	139	0.42	1.49	93	2.11	-0.60
	243	7.97	3.49	43	45.90	20.03	129	-0.44	0.31	71	0.29	-0.75
Diff		2.18	1.98		-12.92	-2.39		0.86	1.18		1.82	0.15
PF	504	10.52	4.79	73	47.00	22.21	241	7.25	2.21	190	0.65	1.38
	537	2.42	2.55	50	21.97	30.34	263	0.03	-0.25	224	0.86	-0.38
Diff		8.10^{**}	2.24		25.03^{**}	-8.13		7.22	2.46^{**}		-0.21	1.76
Other	3220	5.94	3.52	655	21.46	17.09	1481	2.44	-0.01	1084	1.33	0.13
	3268	3.72	1.83	406	21.95	18.03	1703	0.61	-0.87	1159	1.92	0.13
Diff		2.22^{**}	1.69^{**}		-0.49	-0.94		1.83	0.86		-0.59	0.00

Panel C: Private Equity

	Full Sample (1991-2018)			1991-1998			1999-2006			2007-2018		
	# Obs.	Current IRR^{Exc}	Next IRR^{Exc}	# Obs.	Current IRR^{Exc}	Next IRR^{Exc}	# Obs.	Current IRR^{Exc}	Next IRR^{Exc}	# Obs.	Current IRR^{Exc}	Next IRR^{Exc}
Univ.	386	1.21	1.08	54	0.44	2.94	165	1.01	0.52	167	1.65	1.01
	427	1.23	1.25	34	1.23	0.93	130	-0.41	-0.06	263	2.03	1.94
Diff		-0.02	-0.17		-0.79	2.01		1.42	0.58		-0.38	-0.93
PF	1077	2.05	0.88	117	4.04	1.95	513	1.86	0.58	447	1.75	0.94
	1512	0.27	0.77	140	1.92	3.17	553	-0.14	0.54	819	0.26	0.52
Diff		1.78^{***}	0.11		2.12	-1.22		2.00^{**}	-0.04		1.49^{**}	0.42
Other	10108	2.67	1.12	1552	2.09	1.26	4225	3.15	1.19	4331	2.40	0.99
	11526	1.31	1.41	1307	0.15	2.28	4051	1.64	0.78	6168	1.34	1.64
Diff		1.36^{***}	-0.29		1.94^{**}	-1.02		1.51^{**}	0.41		1.06^{***}	-0.65

Table IA.18: Investment Performance and Capital Preservation

This table presents portfolio weights, the distribution of real investment paths for four portfolio scenarios based on 1,000 simulations over various horizons (h), and optimal spending rates under different rates of time preference (δ). Panel A shows the asset allocation across the four portfolios, along with each portfolio's mean return and standard deviation. Panel B summarizes percentiles of real wealth after h years, with each portfolio starting the simulation with one dollar of real principal. Real principal values are computed by adjusting for a required 5% distribution and inflation, which is subtracted from the portfolio's nominal return. Inflation and returns are bootstrapped simultaneously. $\mathbb{E}(W_T)$ represents the average foundation's real asset balance at the end of the horizon, while $\mathbb{P}(W_T < 1)$ denotes the proportion of foundations ending the period with a real principal value below 1. Panel C summarizes the optimal spending rule that maximizes CRRA utility (with $\gamma = 4$) across various values of δ, horizons h, and portfolios. Asset class return means are based on forward-looking expectations (at the end of 2022) from institutional advisors and investment consultants provided by Couts, Gonçalves, and Loudis (2023).

	I	II	III	IV
Panel A: Portfolio Weights				
Global Bonds	1.00	0.40	0.00	0.10
Domestic Equity	-	0.30	0.50	0.20
International Equity	-	0.30	0.50	0.20
Hedge Funds	-	-	-	0.20
Private Equity & Venture Capital	-	-	-	0.20
Real Estate	-	-	-	0.05
Commodities	-	-	-	0.05
Expected Return (%)	3.44	6.51	8.73	8.16
Standard Deviation (%)	6.07	11.01	17.77	14.69

	I		II		III		IV	
	$h=25$	100	$h=25$	100	$h=25$	100	$h=25$	100
Panel B: Real Wealth at $s^* = 5\%$								
5^{th}	0.27	0.01	0.32	0.06	0.22	0.06	0.33	0.09
25^{th}	0.36	0.03	0.52	0.17	0.53	0.25	0.61	0.30
50^{th}	0.45	0.04	0.78	0.34	0.96	0.81	0.96	0.76
75^{th}	0.54	0.06	1.11	0.67	1.65	2.57	1.51	2.02
95^{th}	0.74	0.10	1.80	1.83	3.43	9.89	2.85	7.76
$\mathbb{E}(W_T)$	0.47	0.05	0.88	0.59	1.29	3.19	1.19	1.95
$\mathbb{P}(W_T < 1)$	1.00	1.00	0.68	0.85	0.52	0.54	0.53	0.58
Panel C: Optimal Spending Rule (s^* %)								
$\delta = 0.90$	6.20	3.60	6.70	4.60	6.50	4.00	7.90	4.40
$\delta = 0.92$	6.70	3.10	7.60	4.20	6.80	3.40	6.60	3.80
$\delta = 0.94$	6.20	2.60	6.90	3.40	5.50	2.60	6.20	3.00
$\delta = 0.96$	5.90	2.30	6.40	3.20	5.20	2.30	6.70	2.80

Table IA.19:

Private Foundation Responsiveness to Shifts in the Marginal Benefits of Giving

This table reports OLS regression coefficients and standard errors for the relationship between variation in the marginal benefit of charitable support and a foundation's distribution ratio. The dependent variable is a private foundation's distribution ratio at time t. Independent variables include the lagged amount of Federal Emergency Management Agency (FEMA) aid to a given state and lagged controls including the size of the foundation, age of the foundation, investment fees, distributions from the foundation as a fraction of total expenses and contributions to the foundation as a fraction of total income, the number of employees that earn more than fifty thousand dollars, and the number of unpaid directors/trustees. Fund, state, and fiscal year fixed effects are included as denoted. Standard errors are adjusted for double clustering at the state and year level. ***, **, * correspond to statistical significance at the 1%, 5%, and 10% level, respectively.

	Distributions (% Assets)	
	(1)	(2)
FEMA State Total Obl$_{t-1}$	0.017***	0.009*
	[0.002]	[0.004]
Controls	No	Yes
Fund Fixed Effects	Yes	Yes
State Fixed Effects	Yes	Yes
Year Fixed Effects	Yes	Yes
Adj-R^2	0.65	0.69
Observations	253575	226756

Table IA.20:
Performance Persistence of Private Foundations: Empirical Bootstrap *p*-Values
This table reports the performance persistence of returns and p-values obtained via an empirical bootstrap. Panel A reports the performance persistence transition matrix of private foundations based on their previous year size-adjusted performance decile from 1990 to 2020. Entries report the probability that a foundation in one of the listed deciles of size-adjusted performance in the previous period is in the listed decile of size-adjusted performance in the current period. Panel B reports the p-value (obtained via an empirical bootstrap of 1,000 iterations) that a foundation in one of the listed deciles of size-adjusted performance in the previous period is in the listed decile of size-adjusted performance in the current period with the likelihood shown in Panel A by random chance.

Panel A: Performance Persistence Matrix					
Previous	Current Return Decile				
	(1)	(2)	(5)	(9)	(10)
(1)	25.6	12.5	4.9	8.9	18.0
(2)	11.6	14.0	8.9	9.8	8.8
(5)	4.8	8.3	14.4	7.3	5.0
(9)	10.0	10.3	7.3	15.1	11.7
(10)	19.0	9.6	4.9	11.2	25.5

Panel B: Empirical Bootstrap p-values					
Previous	Current Return Decile				
	(1)	(2)	(5)	(9)	(10)
(1)	0.00	0.00	0.00	0.00	0.00
(2)	0.00	0.00	0.00	0.70	0.00
(5)	0.00	0.00	0.00	0.00	0.00
(9)	0.44	0.04	0.00	0.00	0.00
(10)	0.00	0.00	0.00	0.00	0.00

Table IA.21: Private Foundation Giving to Donor-Advised Funds (DAFs)

This table reports OLS regression coefficients and standard errors for the relationship between private foundation characteristics and giving to DAFs. The dependent variable in columns (1) and (2) is the binary decision of whether a private foundation makes a contribution to a DAF in a given fiscal year while columns (3) and (4) is the proportion of gift amounts that goes to a DAF (conditional on foundation-year observations with non-zero giving to DAFs). Independent variables include the size of the foundation, age of the foundation, investment fees, distributions from the foundation as a fraction of total assets and contributions to the foundation as a fraction of total assets, the number of employees that earn more than fifty thousand dollars, the number of unpaid directors/trustees, a foundation's net return, whether a foundation is a charitable trust, an operating foundation, or a corporate foundation. The Appendix provides detailed variable descriptions. Fiscal year and NTEE-10 fixed effects are included. Standard errors are adjusted for double clustering at the foundation organization and fiscal year level. ***, **, * correspond to statistical significance at the 1%, 5%, and 10% level, respectively.

	DAF		DAF % of Gift Amount	
	(1)	(2)	(3)	(4)
Log(Assets)	0.01***	0.01***	-0.02	-0.02
	[0.00]	[0.00]	[0.01]	[0.02]
Investment Fees	-0.51**	-0.51**	-6.37**	-6.38**
	[0.17]	[0.17]	[2.27]	[2.27]
Contributions (% Assets)	0.04***	0.04***	0.15	0.14
	[0.01]	[0.01]	[0.10]	[0.10]
Distributions (% Assets)	0.07**	0.07**	-0.52***	-0.51**
	[0.03]	[0.03]	[0.16]	[0.16]
Log(Age)	-0.01***	-0.01***	-0.05***	-0.05**
	[0.00]	[0.00]	[0.02]	[0.02]
Log(Paid)	0.20***	0.21***	-0.16***	-0.16***
	[0.03]	[0.03]	[0.03]	[0.03]
Log(Unpaid)	0.01***	0.01***	-0.03	-0.03
	[0.00]	[0.00]	[0.02]	[0.02]
Net Return	0.00	0.00	0.36*	0.38*
	[0.01]	[0.01]	[0.18]	[0.19]
Charitable Trust		0.00		0.36**
		[0.00]		[0.12]
Operating		-0.07***		-0.20**
		[0.01]		[0.07]
Corporate		0.03		0.05
		[0.02]		[0.07]
Year Fixed Effects	Yes	Yes	Yes	Yes
NTEE Fixed Effects	Yes	Yes	Yes	Yes
Adj-R^2	0.07	0.07	0.17	0.18
Observations	54436	54436	1408	1408