Doing Good and Doing It With (Investment) Style

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Abstract

We study the asset allocation, spending behavior, fees, and investment performance of U.S. private foundations. We find that large foundations generate positive risk-adjusted returns of about one percent per year. Larger and more sophisticated foundations perform better and invest more aggressively. Foundations with concentrated stock holdings have higher returns but also take on more risk. Because of the constraints imposed by the five percent minimum spending rule and accommodating monetary policy, private foundations increase their risk-taking and reach for yield. Due to these constraints, a conservative asset allocation will decrease real wealth over time resulting in less charitable giving.

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Private foundations play an increasingly important role in modern society. With total assets of about $900 billion in tax year 2016, private foundations distributed nearly $65 billion to support charitable objectives.[1] While the number of private foundations has steadily increased over the past 20 years, just over 1,000 foundations make up 63 percent of total assets and 50 percent of charitable dollars. To support their operating programs and their charitable spending, private foundations rely heavily on their investment portfolios. As private foundations are required to pay out a minimum of five percent of their average fair market value of net investment assets each year and most do not engage in fund-raising activities, their survival hinges on the investment performance of their endowments. Surprisingly, little is known about private foundations' investment performance, asset allocation decisions, and spending behavior.

This paper provides the first detailed study of the investment performance, fees, and payout policies of U.S. *private* foundations. Do private foundations outperform benchmarks? What factors drive investment performance and asset allocation decisions? What are the implications for spending policy and capital preservation? Are private foundations driven by self-interest or societal interest in their operations? Unlike other nonprofit organizations, private foundations must pay out an average of five percent of their investment assets each year. This unique feature creates a tight link between investment performance and the ability of foundations to survive and meet their charitable goals. In this paper we seek to answer these questions and provide a framework for improved recommendations in the nonprofit charitable sector.

We draw on data from the Internal Revenue Services (IRS) from 1991 to 2016 and provide evidence that larger foundations have delivered positive risk-adjusted returns. As asset allocation decisions are a critical component of an investor's overall risk-taking attitude and future returns, we document a shift towards riskier assets such as public equity and alternative investments (Gilbert & Hrdlicka, 2015; Hooke, Yook, & Chu, 2018; Lerner, Schoar, & Wang, 2008). We find that private foundations "reach for yield" and increase their allocation to risky assets in response to interest rate declines which increases the binding nature of the mandated spending constraint (see Campbell & Sigalov, 2021; Crook, 2012). Using novel data on investment fees, we document significant heterogeneity in the effect of fees on investment return performance with internal (external) investment fees corresponding to positive (negative) future returns. In a simulation, we link asset allocation decisions to the ability of foundations to sustain spending and to maintain the real value of their corpus in future periods.

Private foundations are independent legal entities that support charitable giving across the nonprofit sector in the United States. Besides being a solid source of income for nonprofit organizations, private foundations manage substantial assets to generate investment income. They are also relatively unconstrained, long-term investors with the desire to spend their corpus in perpe-

[1] In 2016, private foundations comprised 16 percent of the $390 billion donated to U.S. charities (Giving USA, 2017) while the nonprofit sector made up about 5.6 percent of U.S. GDP (NCCS, 2020).

tuity.[2] The liability structure of private foundations differs markedly from pension funds, where plan beneficiaries represent liabilities that must be met over time. Moreover, private foundations often receive their original wealth from successful families or individuals in the form of stocks, which makes them less diversified than other institutional investors, such as university endowments. Private foundations also differ from sovereign wealth funds (SWF) which rely on natural resources, trade-surpluses, or state-owned asset sales (Bernstein, Lerner, & Schoar, 2013). Private foundations rely heavily on their endowment investment income to meet the five percent required spending rule each year and to maintain the real value of their corpus because they seldom engage in fund-raising activities or receive government support.[3] In contrast, most colleges and universities in the United States rely on a mix of government grants and contracts, tuition and fees, investment returns, and private gifts and grants to support their operating budgets. Finally, private foundations contribute to the efficient allocation of philanthropic capital between donors and charitable entities (Allen & McAllister, 2019; Andreoni & Payne, 2003), and they provide a credible signal to donees of the potential for charities to achieve their missions (Andreoni, 2006). These unique features speak to the importance of a comprehensive study of private foundations' investment performance, asset allocation, and payout policies.

There is little research to date on the investment performance of private foundations, mostly due to the lack of high-quality data.[4] In this paper, we provide an estimate of the investment performance of private foundations, which file Form 990-PF with the IRS. We rely on the Statistics of Income (SOI) division of the IRS, which compiles balance sheet and income statement information from Form 990-PF since 1985. We collect data on dividends and interests from securities, net capital gains (or losses) from the sale of assets, contributions, distributions, expenses, and a breakdown of investment assets and liabilities for the universe of private foundations in the United States. We estimate total returns using changes in net asset values (NAV) unrelated to charitable inflows and outflows which almost perfectly mirrors returns computed using audited financial statements to validate our measure.

Campbell and Sigalov (2021) theoretically show that reaching for yield (risk-taking when interest rates decline) results from imposing a sustainable spending constraint on an infinitely-lived investor. Private foundations, which seek to operate in perpetuity and must pay out five percent of their fair market value of net investment assets each year, represent the perfect laboratory to study the reach for yield channel. We show that private foundations are more likely to "reach for yield" when

[2] According to Salamon and Voytek (1989), 98.1 percent of private foundations have no scheduled termination date.

[3] In practice, the mandated distribution rate of private foundations tends to be slightly less than five percent. We refer to the mandated spending rate as the five percent rule throughout the paper as the average foundation's use of deductions lowers this threshold by only about 15 basis points.

[4] Nonprofit organizations filing forms 990 are now required to file Schedule D, which contains data on endowment funds, investment earnings, fees, and market values. This data is only available starting in fiscal year 2009 (is available in XML format starting in 2011) and only covers public charities under Section 501(c).

conservative asset allocation policies are not sufficient to cover distributions without eroding their principal. To provide further evidence supporting this "reach for yield" channel, we document heterogeneous treatment effects with constrained foundations (those that previously spent near their level of mandated distributions) having a significantly higher propensity to shift towards riskier assets due to an inability to lower their spending rate. We document similar effect heterogeneity among foundations reliant on their dividend yield to cover mandated distributions and variation in "reach for yield" behavior by size groupings with larger foundations reaching towards alternatives and smaller foundations towards equity.

More importantly, our data also allow us to study the investment performance of private foundations. Practitioner sources document that private foundations, in aggregate, underperform a 60/40 portfolio using data from 2007 onward.[5] We confirm this empirical fact, but we also document that private foundations significantly outperform the 60/40 portfolio from 2000 to 2008 leading to positive risk-adjusted returns for private foundations. Overall from fiscal years 1991 to 2016, private foundations grew at an annual value-weighted basis of 9.18 percent while the return on a 60/40 portfolio was 8.78 percent. Our results document substantial variation in the performance of private foundations as from fiscal years 1991 to 2007, a value-weighted portfolio of private foundations exceeds the 60/40 portfolio by 1.22 percent annually (11.44 percent versus 10.22 percent) while from fiscal years 2008 to 2016, the value-weighted index slightly underperforms the 60/40 portfolio by 1.05 percent (5.04 percent versus 6.09 percent). Notably, these descriptive return differences remain when we include risk-adjusted returns composed of common asset indices and the equity-style factors from Carhart (1997).

We attribute a large share of return variability 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. On a risk-adjusted basis, foundations with more than $500 million in total assets generate alphas ranging from 100 to 180 basis points per year. When including a private equity/venture capital factor, these estimated measures of alpha for the very largest foundations fall to 20 basis points indicating their outperformance stems largely from alternative asset exposure. On the other hand, smaller foundations generate negative alphas on average. We document time variation in alphas and stress the importance of analyzing longer time periods to capture this variation and provide more precision in estimating factor exposure.

Private foundations provide a unique laboratory to study the implications of concentrated holdings on investment returns, especially in light of the information donating insiders possess. Unique to our institutional investment setting, private foundations often begin with a single stock gift from a donor. In contrast to the findings of Markowitz (1952) and modern portfolio theory, we find

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

that over 10 percent of the largest private foundations hold more than 30 percent of investment assets in a single stock. We find that foundations with concentrated holdings have higher net returns of 160 basis points; however, concentration results in a significantly lower Sharpe Ratio. In robustness results, we verify these concentrated foundations do not drive our estimated outperformance results.

Regarding the societal benefit and altruism of private foundations, we provide evidence that private foundations do respond efficiently to increases in the marginal benefit of giving. We find that private foundations increase their spending rates when the marginal benefit of charitable support increases proxied for by exogenous variation in natural disasters in a foundation's home state with stronger effects for foundations with broader grantmaking missions. We also provide evidence of the interplay between private foundations and Donor-Advised Funds (DAFs) given the recent growth of DAFs (Grennan, 2022) and the ability of private foundations to give their mandated distributions to a DAF. We find that private foundations gave nearly $3 billion to DAFs from 2010 to 2020 with giving coming from more sophisticated foundations and that the proportion of giving to DAFs is significantly higher conditioning on a foundation's net return providing some evidence of the use of smoothing by private foundations. These gifts to DAFs suggest a desire of private foundations to avoid short-term giving constraints while we document a small number of foundations appear to exploit this loophole for personal benefit.

Our paper contributes to the vast literature on the investment performance of institutional investors and the effect of fees on performance. Dahiya and Yermack (2021) and Lo, Matveyev, and Zeume (2021) study the investment returns of nonprofit endowment funds in the U.S. from 2009 to 2018. While these studies use novel data on endowment funds and their investment earnings from the IRS, this data was only required since 2009. In contrast, our data covers private foundations (which file Form 990-PF) and is available for about 30 years. Comparable to Dahiya and Yermack (2021) and Lo, Matveyev, and Zeume (2021)'s results for nonprofit endowment funds and FoundationMark's © analysis on private foundations, we find that private foundations underperform between 2008 and 2016, which is consistent with the challenges faced by institutional investors to outperform in the new world of equity bull markets, accommodating monetary policies, and low volatility. We also use novel data on the fees paid by private foundations from 2009 to 2018 and examine the link between fees and performance (Carhart, 1997; Fama & French, 2010; Grossman & Stiglitz, 1980; Jensen, 1968; Servaes & Sigurdsson, 2018).

To the best of our knowledge, we are the first to examine the asset allocation behavior and investment performance of private foundations across a representative sample of data to document their positive risk-adjusted investment performance overall from 1991 to 2016. Heutel and Zeckhauser (2014) use the SOI data from 1982 to 2007 to document variation in the raw returns across private foundations and foundation characteristics that are correlated with higher raw returns. However, Heutel and Zeckhauser (2014) examine only the relationship between foundations' raw returns rather than creating risk-adjusted returns or benchmarking returns in any manner. The most related paper in spirit to our findings is Lerner, Schoar, and Wongsunwai (2007) which finds that private foundations have an excess internal rate of return (IRR) of 26.3 percent above other comparable limited partner investments by institutional investors driven by their large outperformance in early-stage VC funds (78.3 percent excess IRR). Lerner, Schoar, and Wongsunwai (2007) use a volunteer sample of 23 foundations' LP investments from 1991 to 1998, and it is unclear ex-ante how these results generalize to a broader, cross-section of private foundations and aggregate portfolio performance over time given concerns over IRR (Phalippou, 2008). Our findings while similar in direction to Lerner, Schoar, and Wongsunwai (2007) in documenting the outperformance of private foundations contribute an understanding of heterogeneity over time, across size groupings, and account for a private foundation's entire portfolio.

This paper contributes to a growing literature on the reaching for yield behavior of institutional investors. We are the first to document this reaching for yield behavior in a nonprofit setting and contribute to a literature examining the effect pensions funds (Andonov, Bauer, & Cremers, 2017; Lu et al., 2019), individual investors (Kent, Garlappi, & Xiao, 2021; Lian, Ma, & Wang, 2019), and other financial intermediaries (Becker & Ivashina, 2015; Choi & Kronlund, 2018; Crook, 2012; Di Maggio & Kacperczyk, 2017; Jiang & Sun, 2020).

We add to the sparse literature on nonprofit organizations, their grant making decisions and charitable giving (Allen & McAllister, 2019; Almond & Xia, 2017; Andreoni, 2006; Schmitz, 2021), management of foundation assets (Nelson, 1967; Salamon, 1993; Salamon & Voytek, 1989), their spending behavior (Brown et al., 2014; Halem et al., 2022; Merton, 1993; Tobin, 1974; Yermack, 2017), and compensation of nonprofit executives (Babenko, Bennett, & Sen, 2021; Binfarè & Harris, 2022; Hartzell, Parsons, & Yermack, 2010). Yermack (2009) finds evidence of corporate executives committing insider trading through their corporate stock donations, backdating stock gifts, and maintaining corporate control through the use of gifts to private foundations. Our paper provides a more holistic overview of the private foundation universe, and our causal evidence on private foundations efficiently responding to shocks to the marginal benefit of giving suggests that most private foundations operate for societal rather than personal benefit.

Finally, Campbell (2011) and the prevailing thought within the endowment community have claimed that it is sustainable for infinitely-lived investors to spend the average return on invested principal. We emphasize the importance of private foundations seeking to live in perpetuity to spend strictly less than their average return on invested principal in accordance with the findings of Aase and Bjerksund (2021) and Dybvig and Qin (2021). Connected to this finding, we examine alternatives to the mandated five percent distribution rule which would allow private foundations to maximize the present value of their charitable distributions according to their time preference and urgency of the charitable causes they support(Brown & Scholz, 2019; Lindset & Matsen, 2018).

1 Institutional Background

1.1 Definition and Objectives

A private foundation is an independent legal entity that provides a vehicle for charitable giving. Private foundations begin with a gift from an individual donor, family, or corporation. After their founding, foundations rely primarily on investment returns to provide support in the form of grants to public charities. The structure of private foundations is an appealing means for families or corporations to conduct their altruistic efforts by allowing greater control of the timing and use of donations while creating a perpetual giving vehicle to advocate for specific causes. Similar to public corporations, private foundations feature a board of directors and trustees to provide oversight to the organization and a mission statement to provide clarity and focus to a foundation's objectives.[6] Despite valid historical concerns of self-dealing by foundation trustees for personal benefit, a 1965 study on private foundations by the Treasury Department concluded that private foundations "constitute a powerful instrument for evolution, growth, and improvement in the shape and direction of charity" (American Bar Association, 1966).[7]

1.2 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 percent of adjusted gross income (AGI) for cash contributions, 20 percent of AGI for non-cash, while donated appreciated stock (publicly traded stock held for more than one year and not subject to any resale restrictions) receives a deduction equal to the stock's fair market value.[8] Private foundations are required to file the IRS Form 990-PF, a publicly disclosed document used for tax filing purposes, which 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

[6] For example, the Bill and Melinda Gates Foundation's mission statement specifies its focus to help all people lead healthy, productive lives through the advancement of health systems, poverty alleviation, and educational opportunities (www.gatesfoundation.org).

[7] 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).

[8] 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. 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.

Reform Act of 1969 was passed to limit the use of private foundations for personal gain rather than philanthropic purposes (Worthy, 1975) requiring the imposition of no "self-dealing" rather than a more moderate restriction only on "arm's length" transactions. Additionally, the Tax Reform Act of 1969 mandated that private foundations were only permitted to hold up to 20 percent 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 must distribute a certain average percentage of their assets for charitable purposes each year. Specifically, they must spend an average of at least five percent of their average net investment assets on charitable activities, grants, and other qualified distributions.[9,10] This rule is designed to ensure that private foundations actively support charitable causes and not simply hoard assets. Failure to meet the minimum spending requirement can result in penalties and potentially the revocation of the foundation's tax-exempt status. The mandated spending requirement is somewhat different for private operating foundations, which conduct their own charitable programs and activities. Private operating foundations must spend at least 85 percent of their adjusted net income on their own charitable programs and activities, rather than making grants to other organizations. Some private non-operating foundations are set up as a non-exempt charitable trust under Section 4947(a)(1) of the tax code. These trusts must fully devote to charitable purposes, must have taken an income-tax deduction, and they follow 501(c)(3) private foundation rules. They also have to file a Form 990-PF like other private foundations, but also file a Form 1041 if there is any taxable income. Charitable trusts are often set up by wealthy families after the death of an individual and to continue their philanthropic legacy.

1.3 Alternative Philanthropic Vehicles

In more recent years, there has been substantial legal innovation and change within the philanthropic sector beyond private foundations to vehicles with fewer restrictions and lower-quality governance. Donor-Advised Funds (DAFs) are the fastest growing vehicle for philanthropic giving in the United States (Grennan, 2022), and in 2020 DAFs held more than $120 billion in assets earmarked for charitable use. DAFs provide more flexibility in the use of charitable funds as there is no minimum spending requirement, but this has led to substantial variation in giving rates according to the Council of Michigan Foundations which found that 35 percent of DAFs did not make a distribution to charity in 2020. Additionally, 501(c)(4) social welfare organizations have grown in popularity recently due to their protection from capital gains tax, freedom of asset use

[9]The Tax Reform Act of 1969 initially set the minimum spending rate at 6 percent before this rate was lowered to 5 percent in 1976

[10]Private foundations can carry-forward distributions in excess of their mandated spending requirement to lower their subsequent distributions for up to five years.

for non-traditional charitable activities, and no minimum spending requirements. Despite lacking the traditional income tax deduction, these vehicles include a capital gains tax deduction that is particularly valuable to high net worth individuals, while the lack of oversight and no limits on "self-dealing" activities appeal to potential donors with lesser altruistic motivations (Orol, 2021). Private foundations, despite their imperfect governance structure, appear to best align the interests of donors and societal benefits.[11]

2 Data and Measurement

2.1 Sample

We download all 990-PF statements filed by private foundations with the Internal Revenue Service (IRS) which are made available through the IRS' Statistics of Income (SOI) division. These include an asset-weighted sample of all private foundation 990-PF filings for a given fiscal year. The SOI 990-PF filings include every reporting foundation with more than $10 million in fair market value of total assets and a sampling of foundations below this threshold that are selected with a sampling rate decreasing in their total asset value.[12] As originally analyzed in Heutel and Zeckhauser (2014), we use this subset of 990-PF filings as it includes the fair market value of investment asset classes allowing us to compute the true investment return of private foundations consisting of both realized and unrealized gains. While this sample comprises less than 20 percent of private foundations, it represents more than 80 percent of the total fair market value. For fiscal year 2016, the largest 50 private foundations accounted for over 28 percent of the total asset values of the more than 95,000 reporting private foundations.

Table 1 provides a general summary of the 990-PF's universe of reporting foundations, total asset values, and distributions over time. The number of reporting foundations has increased from just over 4,000 in 1991 to nearly 18,000 in 2016 representing a cumulative average annual growth rate of nearly six percent. The entry of private foundations into the sample reflects both the creation of new private foundations and an increasing number of private foundations crossing the sampling threshold of $10 million in total assets and now being included in the sample. Similarly, the exit of private foundations from the sample captures both private foundations that have ceased operations and foundations that have not been selected as part of the SOI's sample of private foundations. The creation of private foundations occurs more frequently during periods of economic growth that

[11] Orol (2021) points out that private foundations' distributions to donor-advised funds count towards their mandated spending rule and represent a way for private foundations to manipulate their spending rule. We examine the commonality of this channel in the final section of our paper.

[12] Conditional on a foundation below this threshold being selected through the stratified random sampling process, it has a greater chance of being sampled again. For smaller foundations appearing at least once in the SOI data, we observe close to 80 percent of filings with missingness that appears random when cross-checking the SOI data with the IRS Core Filings which contain the full universe of private foundation filings.

followed recessionary periods such as 2003 and 2008 to 2010 while private foundations exit the sample during periods of negative investment returns.

Figure 1 displays the growth of the 990-PF's universe of private foundations' total assets, fair value of investment assets, distributions and contributions over time. The growth of private foundations' assets over time from about \$150 billion in 1991 to nearly \$800 billion in 2016 reflects both the growth in asset valuations due to their investment performance and donor contributions to existing and newly-created private foundations. The ratio between total assets and investment assets remains relatively constant during the sample, reflecting the persistence of foundations' investment policy statements over time and the shift within investment asset classes rather than to cash. The steady growth of distributions from about \$10 billion in 1991 to over \$50 billion in 2016 reflects that foundations' have maintained real giving beyond inflation due to growth in real principal over time.

We begin with 274,970 annual foundation filings from fiscal years 1985 to 2016 of U.S. private foundations with positive total and investment asset values at the beginning and end of each fiscal year and beginning of year assets different from end of the year assets. We restrict our analysis to foundations reporting for fiscal years 1991 to 2016 due to data validity and missing data concerns preceding 1991 which leaves us with a sample of 269,681 observations. In order to compute investment returns, we require foundations to have a lagged value of investment assets (238,489 observations) and that this value remains positive when accounting for the timing of contributions and distributions throughout the year (237,382 observations). Furthermore, to validate the inclusion of returns data of the sample of firms from 1991 to 2016, we compile annual returns data for individual stocks from CRSP over this period. To mitigate the effect of estimation errors in computing returns we include only private foundations reporting returns that fall between the 10^{th} and 90^{th} percentile of all stocks in CRSP each year. This final filter results in a return measure for 231,495 observations which we condition on when conducting our analysis.[13] To facilitate the comparison of private foundations' return performance and growth across time and size buckets, 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.

Panel A of Table 2 presents descriptive statistics on consolidated data of the fair value of asset valuations, contributions, and distributions. The average (median) foundation has about \$45 million (\$10 million) in total assets, while total assets stand at about \$3.6 billion on an asset-weighted basis. Many foundations are dependent upon their investment performance alone to sustain themselves, as evidenced by the minimal contributions to the foundations within our sample. Distributions as a percentage of the average fair market value of assets taking values close to five

[13] Our dynamic filtering procedure eliminates 1,312 observations with returns lower than the 10^{th} percentile of all stocks in CRSP and 4,575 with returns greater than the 90^{th} percentile of all stocks in CRSP. The fact our filtering is more likely to remove high-performing foundations results in a slight downward bias in our estimates of private foundations' investment performance.

percent reflects that most foundations closely seek to meet their required distributions without use of the carry-forward provision. For comparison, higher education institutions participating in the 2016 NACUBO-Commonfund Study of Endowments (NCSE) reported an average spending rate of 4.3 percent, a median gift of $2.8 million, and that 9.7 percent of their operating budget is funded by their endowment (NACUBO-Commonfund, 2016).

2.2 Asset Allocation

The asset allocation of private foundations plays an important role in supporting their charitable giving and long-term sustainment. Investment assets are classified into six asset groups on the Form 990-PF: government debt, corporate debt, corporate stock, other investment assets (e.g., alternative investments), investments in lands, buildings and equipment, and investments in mortgage loans. From 1991 to 2016, the asset allocation of private foundations has shown significant increases in weighting to higher yielding asset classes of equity and alternatives at the expense of fixed income. Private foundations' allocation to government debt has fallen from 22 percent in 1991 to just 2 percent in 2016 due to the declining yields of U.S. treasury debt over time (see Figure 2).[14] Meanwhile, allocation to equity and alternatives by private foundations have increased from about 50 percent of investment assets in 1991 to nearly 80 percent in 2016 due to foundations' desire to sustain their real endowed principal in a low-yield interest rate environment.

Another important feature constraining the asset allocation of private foundations from solely investing in equity and alternative investments is their need to maintain enough liquidity to make supporting distributions throughout the year. The McKnight Foundation in its 2019 audited financial statement specified a majority of the endowment assets should be placed in investments having liquidity of less than 30 days, and the foundation targeted a 12 percent allocation to highly liquid fixed income and cash investments.[15] Panel B of Table 2 provides an unconditional breakdown of asset allocation across all private foundations while Table A.1 conditions on a foundation's inflation-adjusted size. The results in Table A.1 show the asset allocation to cash and government bonds increases only slightly as foundation size decreases due to foundations' similar liquidity needs. In contrast, there is large variation in foundations' exposure to "risky" assets across size groupings. Exposure to corporate bonds and equity is nearly monotonically decreasing in size while alternative exposure is increasing in size with the largest foundations investing nearly ten percent more to alternatives (25.04 percent versus 15.84 percent).[16]

[14]The 10-year U.S. treasury yield has fallen from 8.03 percent in January of 1991 to 2.45 percent in December of 2016. 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.

[15]See https://www.mcknight.org/wp-content/uploads/2019-McKnight-Financial-Statement.pdf

[16]The nature of alternative asset exposure varies by foundation size as larger private foundations have direct exposures to hedge funds and private equity as limited partners while smaller foundations have indirect

2.3 Investment Performance

To study the investment performance of private foundations we estimate total gross returns as:

$$R_{it} = \frac{\text{Net Assets}_{it} - \text{Net Assets}_{it-1} - \text{Contributions}_{it} + \text{Distributions}_{it} + \text{Expenses}_{it}}{\text{Adjusted Investment Assets}_{it-1}} \quad (1)$$

where the gross investment income for a private foundation i at time t is calculated as the change in net assets from period $t-1$ to period t minus contributions made by the foundation in the last fiscal year, plus distributions and operating expenses paid by the foundation in the last fiscal year.[17] The net investment income for a private foundation is the gross investment income less any operating and administrative expenses for compensating investment employees, fees, taxes, and other applicable investment expenses. These include investment consulting, custody, and manager fees, as well as fund expenses and portfolio deductions from the Schedule K-1.[18] The gross and net investment return percentage performance are created by dividing the gross and net investment income by a private foundation's fair value of investment assets at the beginning of the fiscal year adjusted for half of contributions and distributions (Dahiya & Yermack, 2021).

To validate our measure of net returns estimated from Equation 1, we sample 29 of the largest private foundations and compute net returns using their audited financial statements. Table A.2 compares the investment returns computed using the audited financial statements versus the 990-PF. Our return methodology using the 990-PF accurately replicates the audited financial statements with a 99.98 percent correlation between the two series and a sample standard deviation of just 8 basis points which allows us to study the comprehensive universe of private foundations.

Panel C of Table 2 provides detailed information of the investment performance of private foundations. We also decompose total returns into dividend yields and capital gains (both realized and unrealized). The average (annual) net investment return is 8.32 percent, while the average asset-weighted return is 10.10 percent. As a comparison, the average net investment return for the universe of institutions reporting to NACUBO over the same time period is 8.00 percent, while the average asset-weighted return is about 10 percent.[19] Larger foundations significantly outperform smaller foundations, in addition to paying a smaller proportion of investment fees as a fraction of AUM. In fact, the average foundation pays investment management fees of 81 basis points compared

exposures through outsourced investment management to institutional asset managers like Commonfund.

[17] The main measure of return performance we use is an approximation of the true return for a private foundation as the timing of a foundation's investment cash inflows and outflows are not reported on the IRS Form 990-PF. We assume that contributions and distributions occur mid-year, but our returns analysis is robust to adjusting for contributions occurring in the beginning of the year and distributions occurring at the end of the year which negatively biases our return measure.

[18] Some private foundations do not disclose investment management fees as a separate item, as those are subtracted from net capital gains and/or from the fair value of investment assets at the end of the year. Our measure would capture the net effect of investment fees on returns in either case.

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

to an asset-weighted average of 58 basis points. The asset-weighted results also confirm that the largest foundations rely less on dividend-paying investments but instead are more dependent on unrealized capital appreciation. Figure A.1 and Figure A.2 in the Appendix show the evolution of total net returns, dividend yields, realized and unrealized gains, investment fees and Sharpe Ratios over time.

3 Asset Allocation Decisions of Private Foundations

Asset allocation decisions have been a major driver of asset growth and increased investment sophistication for many institutional investors such as private foundations and university endowments. There are four important reasons why asset allocation policies matter in the context of private foundations. First, asset allocation decisions are a key ingredient of portfolio total returns (Brinson, Hood, & Beebower, 1986; Brinson, Singer, & Beebower, 1991). Second, many private foundations receive their initial endowment from a single individual or family in the form of common stock, therefore increasing concentration risk during the first few years of a foundation's life.[20] Third, there is a tight link between a foundation's liquidity needs, spending policy, and asset allocation decisions. Fourth, foundations must spend five percent of their fair market value of investment assets each year, which might induce risk-taking behaviors, more so when interest rates are low.

To investigate the asset allocation choices of private foundations cross-sectionally, we estimate the following pooled OLS model:

$$Y_{it} = \gamma \mathbf{X}_{it} + \lambda_t \times NTEE_i + \varepsilon_{it} \tag{2}$$

where Y_{it} represents the allocation to an asset class as a percentage of the book value of investment assets.[21] $\mathbf{X}_{it}$ is a vector of controls which includes the natural logarithm of a foundation's assets, the natural logarithm of a foundation's age, fees (as a percentage of investment assets), 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. λ_t represents fiscal year fixed effects and is interacted with a foundation's last reported National Taxonomy of Exempt Entities (NTEE) code to control for macroeconomic shocks to all foundations supporting similar

[20] For example, the Ford Foundation held 92,697,240 shares of Ford Motor in 1955. These represented 83.4% of the outstanding Ford Motor stock and 100% of the foundation's initial holdings (see Nelson, 1967)). In 1974, the Ford foundation sold all of its Ford Motor Company Stock, and since then, the foundation has been completely independent with no Ford family affiliation (Ford Foundation, 2022).

[21] We use book values to better approximate changes in strategic asset allocations, rather than changes in fair values, which are driven by market conditions.

philanthropic causes within a given fiscal year. We independently double-cluster the standard errors by private foundation and fiscal year.

Table 3 presents results across the four main investment asset classes. Columns (1) and (2) examine the asset allocation to fixed income securities, namely government bonds and corporate bonds. Results across the two fixed income securities are quite similar: older foundations allocate more to fixed income, while higher investment fees and expenses correlate with lower asset allocations to bonds. Additionally, greater investment team sophistication as proxied by the number of highly paid individuals is associated with lower asset allocation to government and corporate bonds. Transitioning to risky assets, columns (3) and (4) study the asset allocation to equity and alternative investments. Older foundations have larger allocations to equity that comes at the expense of alternative investment holdings, but this pattern reverses when we estimate a within-foundation estimator.[22] Column (4) finds that larger foundations invest more in alternatives and fees increase with the share of assets allocated to alternatives.

Finally, we examine the relationship between the governance structure and internal staff of private foundations and their asset allocation strategy. Our findings suggest that foundations with more highly paid staff tend to invest more in alternative assets and less in publicly traded equity. Additionally, those with a greater number of unpaid directors and officers also allocate more towards alternative investments and less towards public equity and corporate bonds. This effect is likely due to a larger board of trustees, which might bring additional expertise beyond that of paid officers like Chief Investment Officers. Operating foundations invest most aggressively among the foundation groupings as evidenced by their large exposure to alternatives which is likely due to their direct link between their investment performance and charitable programs they conduct.

3.1 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 (2021) theoretically show that reaching for yield (risk-taking when interest rates decline) results from imposing a sustainable spending constraint on an infinitely-lived investor. Private foundations, which seek to operate in perpetuity and must pay out five percent of their fair market value of investment assets each year, represent the perfect laboratory to

[22] Figure IA.1 examines the non-parametric effect of age on private foundation asset allocation by binning foundations within age quartiles in a given calendar month, calendar year. The youngest and oldest foundation quartiles (quartiles 1 and 4) appear to have similar levels of risk-aversion and sophistication, as they invest more towards public equity by sacrificing exposure to alternatives than the middle quartiles. Figure IA.2 documents a similar consistency of spending ratios among the youngest and oldest foundations around seven percent, while the middle quartiles spend closer to eight percent on average. Interestingly, Figure IA.2 also shows that net returns by private foundations are monotonically increasing in age, with the oldest foundations achieving a net return around nine percent while the youngest foundations have an average return below eight percent.

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:

$$Y_{it} = \beta Yield_{t-1} + \gamma \mathbf{X}_{it} + \delta Y_{it-1} + \nu_i + \varepsilon_{it} \quad (3)$$

where Y_{it} is a foundation's book value of asset allocation to an asset class, $Yield_{t-1}$ is the 10-year treasury constant maturity rate, $\mathbf{X}_{it}$ 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.[23] We use book values to better approximate net flows to an asset class, rather than changes in fair values, which are driven by market conditions.[24]

The results in column (1) of Table 4 Panel A show that the share of assets allocated to equity increases by 73 basis points for a 1 percent decline in the yield on the 10-year Treasury rate. The results in column (3) document a 59 basis increase in a private foundation's asset allocation to alternatives in response to a 1 percent decline in the real interest rate, while column (5) shows that this shift comes largely at the expense of government bonds (88 basis points decrease).

Our initial results confirm the presence of reaching for yield behavior by private foundations by using time-series variation in the real interest rate experienced by private foundations. A key 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 phenomena, 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 alternatives in response to declines in the real interest rate due to its ability to adjust spending downwards.[25]

We rely on cross-sectional variation across a foundation's lagged characteristic of its qualified distribution (QD) ratio, which is constructed as the ratio between the qualifying distributions a foundation pays out and the 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

[23] 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 A.3 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 reaching-for-yield channel.

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

[25] We thank our anonymous referee for this heterogeneous treatment effect test exploiting variation in foundations' lagged proximity to the mandated spending threshold to exogenous interest rate shocks.

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:

$$Y_{it} = \beta_1 Yield_{t-1} + \beta_2 QD_{t-1} + \beta_3 QD_{t-1} \times Yield_{t-1} + \delta Y_{it-1} + \gamma \mathbf{X}_{it} + \nu_i + \varepsilon_{it} \quad (4)$$

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 a lagged qualified distribution ratio one standard deviation above the mean (about an 8 percent higher spending rate) experience a 54 basis point increase in their equity investments when the real interest rate declines by one percent while more constrained foundations with average qualified distributions experience a 72 basis point increase in their allocation to equity (a 25 percent difference in the reaching for yield behavior for a foundation with the average qualified distribution ratio).[26] The results in column (6) document that unconstrained foundations (those with higher QD ratios) have smaller allocations away from government bonds in response to declines in the real interest rate. The results in column (4) find limited evidence of heterogeneous reaching-for-yield behavior towards alternatives, though this pattern might be obscured by the presence of smaller foundations that lack access to alternative asset classes.[27,28]

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 phenomena. The results in column (2) of Panel B shows that smaller, constrained foundations (foundations with a low QD ratio) are more likely to reach for yield towards equity. Regarding alternatives, the results in column (4) document that larger, constrained foundations are more likely to reach for yield towards alternatives. 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

[26]The average foundation has a lagged qualified distribution ratio of 1.41 which implies a one percent decline in $Yield_{t-1}$ is linked to an increase in its equity allocation of 72 basis points (-0.88 × -1.00 + 0.11 × -1.00 × 1.41 = 0.72 percent. A one-standard deviation increase in the lagged qualified distribution ratio corresponds to a lagged qualified distribution ratio of 3.07 which implies a one percent decline in $Yield_{t-1}$ is linked to an increase in a foundation's equity allocation of 54 basis points (-0.88 × -1.00 + 0.11 × -1.00 × 3.07 = 0.54 percent.

[27]In untabulated regressions, we show that private foundations reach for yield towards riskier asset classes when conditioning our sample to a narrower bandwidth of foundations with lagged spending rates between four and six percent.

[28]We estimate a triple Difference-in-Difference design in Table A.4 to provide further support for our heterogeneous treatment effects. We expect for foundations with a higher reliance on current income from dividends and interests to cover distributions to be more constrained and hence more likely to reach for yield. The results in column (3) of Table A.4 document that a foundation with a higher lagged reliance on its dividend yield to cover its distributions exhibits greater reaching for yield behavior than a similar foundation which is less reliant on current income to cover its distributions.

estimates.

These results contribute to the vast literature on reach for yield by financial institutions and pension funds (Andonov, Bauer, & Cremers, 2017; Becker & Ivashina, 2015; Kent, Garlappi, & Xiao, 2021; Lu et al., 2019). 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 alternatives) over the last 25 years linked to the increased binding nature of the five percent 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 which we address in the next section.

4 Investment Performance and Performance Persistence

The alternative investment industry has grown tremendously over the last 30 years. Despite the increase in committed capital across a wide range of strategies and alternative asset classes, the debate on whether some institutional investors generate positive risk-adjusted returns and whether performance persists is still ongoing.[29] Related to private foundations, practitioners document the underperformance of private foundations' investment performance from 2007 onward. Notably, FoundationMark© using publicly available 990-PF filings estimates an underperformance of the universe of private foundations to a 60/40 portfolio of stocks and bonds. They estimate that the median private foundation underperforms a 60/40 portfolio from 2007 to 2016 by an annual rate of about 2.3 percent, and this gap persists when extending to 2022.[30] In contrast, Lerner, Schoar, and Wongsunwai (2007) find using a sample of 23 foundations' alternative investments from 1991 to 1998 that their alternative investments exceed the median fund category over this period.

[29]Some studies document performance persistence in the context of mutual funds (Brown & Goetzmann, 1995; Carhart, 1997; Grinblatt & Titman, 1992); however, this persistence does not reflect superior skill in selecting high-performing investments. Busse, Goyal, and Wahal (2010) find only modest evidence of performance persistence in their sample of 4,617 active domestic equity products. In the context of hedge funds, Agarwal and Naik (2000) find short-term persistence among hedge fund managers. Kosowski, Naik, and Teo (2007) and Fung et al. (2008) find that top-performing hedge funds generate positive risk-adjusted performance not explained by luck and that performance persists. Similarly, private equity performance is persistent but has weakened over the last two decades (Harris et al., 2020; Kaplan & Schoar, 2005), and some institutional investors can select high-performing managers and outperform (Cavagnaro et al., 2019; Sensoy, Wang, & Weisbach, 2014).

[30]We find a similar underperformance of about 2.0 percent over the same time period. FoundationMark© interpolates a monthly return series based on foundations reporting throughout the year while our descriptive return analysis uses only foundations with fiscal months ending in December which includes 72 percent of foundations for simplicity. Our measures are nearly identical when comparing the median foundation return, and we also present results below using the average value-weighted returns as this measure better captures the aggregate wealth creation of private foundations.

We first provide descriptive evidence that reconciles these two previous empirical facts by illustrating that private foundations largely outperformed from 1991 to 2008 consistent with Lerner, Schoar, and Wongsunwai (2007) while subsequently under-performed in alignment with results from FoundationMark© and Dahiya and Yermack (2021)'s results from 2008 to 2020 for nonprofit endowments. We then examine whether private foundations exhibit risk-adjusted outperformance, the degree of persistence of private foundations' investment performance, and whether this persistence persists. Persistence in returns when accounting for asset allocation and common risk factor loadings would imply some private foundations are better able to support their philanthropic endeavors over time. In contrast, if the investment returns of private foundations are random or persistence is correlated across investors, foundations should choose a given level of market risk for their portfolio and pursue a passive strategy that minimizes investment management expenses.

4.1 Variation in Descriptive Returns Over Time

Figure 3 documents the outperformance of a value-weighted index of private foundations on a net return basis from fiscal years 1991 to 2016 versus a 60/40 portfolio benchmark composed of the CRSP value-weighted index and the Bloomberg Aggregate Bond index. A dollar invested in the value-weighted index of private foundations would have grown to $9.81 corresponding to an average growth rate of 9.18 percent, while a similar investment in the 60/40 portfolio would have yielded just $8.92 with an average growth rate of 8.78 percent. This discrepancy in returns has large welfare implications in the distributions that private foundations are able to make to the philanthropic sector as well as the degree to which private foundations pursue active investments.

While this outperformance of private foundations was previously undocumented, Figure 4 decomposes the performance of private foundations from fiscal years 1991 to 2007 and 2008 to 2016. The left panel documents that the superior performance of private foundations was exhibited prior to 2008 with the value-weighted grouping of foundations growing at an average rate of 11.44 percent while the 60/40 portfolio grew at an average rate of just 10.22 percent. The right panel documents this pattern of performance has reversed after 2008 with the 60/40 portfolio outperforming the value-weighted grouping of private foundations (an average growth rate of 6.09 percent versus 5.04 percent). The descriptive patterns of returns we document over time while interesting might be driven by private foundations taking excess risk or investing in asset classes that a simple 60/40 portfolio of stocks and bonds fails to capture.

4.2 Risk-Adjusted Returns

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

$$r_{it} - r_{ft} = \alpha_i + \sum_{k=1}^{K} \beta_{ik} f_{kt} + \epsilon_{it} \quad (5)$$

where $r_{it} - r_{ft}$ is the annual net return for private foundation i for year t, minus the risk-free rate. α_i is the abnormal performance computed using the following four factors and f_{kt} is the k^{th} factor return over the same 12 months. 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 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.[31] Because the average asset allocation of private foundations to equity investments during our sample is only 56 percent, selecting index factors analogous to the true opportunity set of private foundations will allow us to better capture their true risk exposures. While we perform our main asset pricing tests of private foundations on index asset class factors, we also use the Carhart (1997) four-factor model for robustness.

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 assure that each private foundation in our estimation has at least seven years of returns. Our full sample of returns data from 1991 to 2016 consists of 231,495 observations for 25,216 reporting foundations, but imposing this restriction results in 198,553 observations (retaining approximately 86 percent of observations) for 14,301 reporting foundations which meet this threshold. To test the statistical significance of the alpha estimates, we use the bootstrap methodology described by Kosowski et al. (2006). In addition to examining the risk-adjusted performance of all private foundations with at least seven reporting years conditional on size, we assure that these alpha and factor loading estimates are robust to other specifications and filtering procedures. Additional robustness specifications include modifying our measure of returns, removing sub-grouping of foundations which might result in a spurious relationship between investment performance and estimated factor exposure, defining alternative size groupings, and limiting the effect of cross-sectional dependence. Lastly, to assure the validity of our risk-adjusted performance results to only requiring a reporting foundation to have seven years of reporting data, we provide bootstrapped t-statistics following Kosowski et al. (2006).

The estimates of risk-adjusted returns and bootstrapped p-values for the bootstrapped distri-

[31]In 2016, CommonFund's survey estimated that the average private foundation in their survey had investments of: 24 percent equity, 8 percent fixed income, 18 percent international equity, 45 percent alternatives, and 4 percent cash. Hedge funds make up the largest allocation to alternative assets accounting for 18 percent of asset allocation or 40 percent of alternative asset allocation for private foundations. Our results are robust to controlling for exposure to private equity and venture capital. We prefer a parsimonious model to minimize the estimation uncertainty in model parameters and not constrain our estimation to only foundations with a large number of reporting periods. Survey available here.

bution are displayed in Table 5 at the private foundation level conditional on private foundation size and a foundation reporting at least 7 years from 1991 to 2016.[32] The overall estimates for the four-factor model alpha in Panel A are statistically significant at all percentile values, indicating that foundations within our sample have alphas on average that differ from zero. For the very large foundations, their bootstrapped average alphas greater than the median are significantly different from zero, indicating they exhibit positive risk-adjusted returns. Their distribution of average alphas below the median being statistically insignificant suggests these negative risk-adjusted returns can be explained by random chance. The two smallest foundation size groupings (under $10 million in investment assets) have both statistically significant positive and negative risk-adjusted returns. Foundations within these groups have significant variation, with some foundations outperforming and others underperforming their risk-adjusted benchmarks, while their estimated negative average return suggests underperformance in aggregate.[33]

Finally, we examine the time-varying nature of investment performance across the three decades spanning our sample period. Applying the Kosowski et al. (2006) methodology at the foundation level, Table A.6 displays the median and mean estimated equal- and value-weighted alphas for private foundations across the 1991-1999, 2000-2008, and 2009-2016 time periods overall and by size groupings. The value-weighted, risk-adjusted performance of private foundations is positive and statistically significant in the second part of the sample estimated at 171 basis points. This is consistent with existing research on the growth in alternatives and the outperformance of large institutional investors during the decade preceding the Great Recession (Lerner, Schoar, & Wang, 2008; Sensoy, Wang, & Weisbach, 2014).

As documented by Dahiya and Yermack (2021), the nonprofit sector has underperformed between 2009 and 2018. We find similar underperformance results using our data on U.S. private foundations. We estimate annual, equal-weighted average alphas of about -87 basis points in the 8 years following the Great Recession. In comparison, Dahiya and Yermack (2021) estimate four-factor alphas of about -93 basis points for nonprofits with more than $100 million in total assets and alphas of about -61 basis points for nonprofits with more than $10 million in total assets (but less than $100 million). Our examination of the time variation in alpha enabled through private foundations returns data spanning 26 years from 1991 to 2016 shows the importance of examining broader time horizons to better understand risk-adjusted returns over time.

[32] Our main specification groups foundations into size buckets based on their average inflation-adjusted fair value of investment assets. Conditional on a foundation appearing in our sample for more than 7 years, 72 percent of foundations never switch size buckets.

[33] Our results are robust to the inclusion of a private equity/venture capital index factor using quarterly data from Cambridge Associates. The average equal- and value-weighted alphas fall to 60 and 20 basis points, respectively, but remains statistically significant. We observe similar stylized patterns of performance by size groupings, in which larger foundations outperform their smaller counterparts. The estimated alphas of smaller foundations remains largely unchanged due to their limited exposure to alternatives, a pattern confirmed in our performance attribution analysis in Table A.5.

4.2.1 Robustness Tests

This subsection reports on a number of robustness tests we conduct. Our finding across a range of tests support our main results.

Alternative measures of return. As 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 add cash and savings to the denominator of Equation 1. Second, we do not adjust for inflows and outflows in Equation 1. The results in Panels A and B of Table IA.2 confirm our results using alternative return measures are quantitatively similar to our main specification.

Alternative filtering procedures. First, we drop operating foundations as these foundations might have differences in the timing of inflows and outflows (due to running their own charitable programs) which might cause differences in the return estimation process. Second, we drop foundations for which the ratio of contributions to total assets is greater than twenty percent to ensure the initial founding year or years with large contribution inflows are not causing us to overestimate returns. Third, some foundations hold a high proportion of cash, savings, and other non-investment assets on their balance sheet. To alleviate concerns that our return measure overestimates unrealized capital gains because of changes in cash holdings over time unrelated to investment assets, we drop observations that have more than 20 percent in cash and savings and less than 80 percent of total assets designated as investment assets. This filter assures that the original results are capturing the risk-adjusted performance of private foundations that are actively investing their assets and retains 85 percent of observations. The results in Panels A to C of Table IA.3 verify our estimates are quantitatively similar across all filtering procedures.

Alternative size groupings and methods. First, we require foundations to report in every fiscal year in the sample to ensure that foundations with relatively few reporting years and imprecisely estimated factor estimates are not driving our results. Second, we assign foundations into size groupings based on their first reported AUM to mitigate the impact that survivorship bias causes on our estimated alphas. Third, we include only foundations with a December fiscal-year end (retaining 68 percent of observations) to ensure that a failure to account for cross-sectional correlation in foundation reporting timing is not driving our results. The results in Panels A to C of Table IA.4 verify our estimates are quantitatively similar across all methodological modifications.[34]

[34]While the very large foundations appear to have statistically insignificant performance in Panel B of Table IA.4 on an equal-weighted basis, this underperformance is driven by non-random entry and exit of private foundations. Grouping foundations into size buckets based on their initial AUM results in only 105 foundations, which makes this estimated alpha easily susceptible to bias. We observe that very large foundations with relatively few reporting years are biasing 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 being present in the sample for 15 years, this estimated, equal-weighted alpha is about 80 basis points while the value-weighted alpha remains greater than 100 basis points across all observation thresholds.

Additionally, to alleviate the cross-sectional dependence among returns of private foundations of similar size, 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. The results in Table IA.5 confirm our results are robust to accounting for the cross-sectional dependence of observations.[35]

Alternative bootstrapping methodology. As foundations with fewer reporting observations might have both large estimated alphas and standard errors, following Kosowski et al. (2006) we bootstrap the distribution of foundation alpha *t*-statistics to mitigate this concern. The results in Table IA.6 provide comparable intuition to our risk-adjusted alpha estimates in Table 5. We document statistically significant outperformance and random underperformance for foundations with greater than $50 million, while foundations below this threshold display statistically significant underperformance and random outperformance.

Alternative risk-adjusted estimation. We estimate a standard equity-based asset pricing test using the Carhart (1997) four-factor model. The results in Panels A and B of Table IA.7 confirm our estimates are quantitatively similar across risk-adjusted models and do not change any of our conclusions.

4.3 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 6 shows the probability that top-performing foundations do not transition out of the top-performing decile the following year is about 26.6 percent. If performance was 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 22 percent 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 17.9 (19.3) percent of the time in the following year.[36]

[35] The number of observations differs conditional on foundation size, as some size-month combinations lack enough observations to estimate the cross-sectional returns due to most foundations' returns occurring in June and December.

[36] Panel B of Table IA.8 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.

To more formally study persistence, we estimate Fama-MacBeth regressions (Fama & MacBeth, 1973) of lagged returns on future returns using various holding periods and horizons. Panel B of Table 6 reports the persistence results for our measure of net returns, size-adjusted net returns, and net returns in excess of the 60/40 portfolio. We find evidence of performance persistence for both short and long time horizons such as two years. Finally, we split the sample based on the years before and after the Great Recession. The results in Columns (2) and (3) document significant performance persistence preceding the Great Recession while the effect of prior performance disappears following this event. This result relates to recent evidence in the hedge funds and private equity literature that finds weakened persistence in the most recent decades (Harris et al., 2020).

4.4 Characteristics of Private Foundations and Performance

We have documented so far that large private foundations generate positive risk-adjusted returns from 1991 to 2016. While the total dollar amount of assets under management (AUM) certainly helps explain cross-sectional variation in returns, other characteristics might translate into higher risk-adjusted performance. Size likely proxies for the opportunity set available to institutional investors. For example, larger and more sophisticated foundations are more likely to gain access to more selective alternative investments in private equity and venture capital funds. Additionally, a foundation's investment performance might also be linked to its governance as creating a tighter connection between investment performance and charitable programs should incentivize greater effort.

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. The regression specification also controls for Year $\times$ Style fixed effects to account for a foundation's time-varying asset allocation. Column (1) documents a strong, negative association between a foundation's lagged value of investment fees and its current investment performance. This negative association between investment fees and performance is consistent with results reported for mutual funds, where funds with high expense ratios underperform. We also document a strong link between investment staff sophistication (both paid and unpaid) on overall investment performance. This association is likely related to cross-sectional differences in in-house expertise and sophistication (e.g., the presence of a Chief Investment Officer).

In column (2), we find that older foundations exhibit higher Sharpe ratios (calculated over a four-year rolling window), which can be attributed to their diversified portfolios as they mature and allocate more to alternative investments. Notably, there is a positive correlation between staff expertise and Sharpe ratios. We also find that investment fees are linked to lower risk-adjusted returns, suggesting that high fees do not necessarily mitigate portfolio risk. Lastly, we find evidence that operating foundations have significantly higher Sharpe ratios and net returns than other governance structures providing support for the benefits of linking the investment and charitable operations of philanthropy. For reference, Grennan (2022) documents that DAFs underperform a stylized benchmark by about 5 percent annually using data from 2013 to 2018 further providing evidence of disparities in performance based on the governance of philanthropic vehicles.

As discussed throughout the paper, private foundations often follow a remarkably different life cycle compared to other institutional investors such as university endowments and pension plans. Many foundations receive their original wealth from successful individuals or families, which make them potentially less diversified than other investors. Given the large degree of idiosyncratic volatility associated with concentrated position, private foundations represent an interesting laboratory to study the effect of equity concentration on performance. To examine the effect of a foundation's concentration of holdings on investment performance, we hand-collect stock holding data from 990-PF filings which are available online after 2001.[37] To mitigate the effects of survivorship bias on our results, we collect concentration data for all foundations with assets greater than $250 million at any point after 2001.[38] We collect data on a foundation's largest stock holding for a foundation's first reporting year after 2001, median, and final reporting year in our sample and backfill the remaining year observations for a foundation.[39] We define a foundation to be concentrated when it holds more than 30 percent of its equity holdings in a single stock, and we find that about 12 percent of foundation-year observations meet this threshold. We also link each stock to CRSP and compute individual stock returns (adjusted for delisting) over the foundation's 12-month fiscal year. The average annual return of these individual stocks is about 18 percent, much larger than the 11 percent earned by the CRSP value-weighted return index over the same period. However, concentrated holdings have a standard deviation of returns of about 41 percent, compared to only 17.5 percent for the CRSP value-weighted return index.

The results in column (3) of Table 7 examine the link between investment performance and foundation characteristics for the subset of foundations on which we collect concentration data. Concentrated foundations outperform by about 160 basis points per year. We continue to find a positive link between the number of highly compensated individuals and future performance.

[37] Form 990-PF filings are available from ProPublica.org

[38] We examine the effects of concentration on only a subset of larger private foundations due to their economic importance and to determine whether concentration is driving their positive risk-adjusted performance. Additionally, we expect for larger private foundations to have a much higher likelihood of being concentrated than smaller foundations due to the link between foundation and donating firm control that make a larger foundation more likely to retain a concentrated position in a stock holding (i.e., The Brin Foundation: Google, Paul Allen Family Foundation: Microsoft, WK Kellogg Foundation: Kellogg Company, Annie Casey Foundation: United Parcel Service (UPS) of America).

[39] For most foundations in our sample, we collect data on their holdings from 2001, 2008, and 2016. By backfilling a foundation's concentration status we are able to collect data on a larger sample of private foundations, and it relies on a reasonable assumption that if a foundation was concentrated in 2001 that it was concentrated in 1991. Due to the limited contributions larger foundations receive after their founding, the likelihood of a foundation going from being diversified to concentrated are rather small which further supports our use of back-filling a foundation's concentration status.

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. In addition, investment fees are uninformative in explaining returns due to the limited fees paid by concentrated foundations.

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 12-month return earned by the concentrated stock while this variable is set to zero for foundations that do not have a concentrated position.[40] Column (4) documents that concentrated foundations underperform non-concentrated foundations by 1.57 percent when the return on their concentrated stock position is zero. This result documents that concentrated stock holdings drive the outperformance of concentrated foundations rather than the remainder of their portfolios.

Columns (5) and (6) document similar patterns in the connection between a foundation's concentration and its Sharpe Ratio. The results in column (5) show that the expected increase in stock returns for concentrated foundations is offset by their increased idiosyncratic risk. Once we control for the 12-month return earned by the concentrated stock, the results in column (6) confirm that concentrated foundations have Sharpe ratios that are 0.25 lower than non-concentrated foundations when the return on their concentrated holding is zero.

In summary, the concentration results in Table 7 document that concentrated holdings increase expected returns, albeit at a cost of an increase in idiosyncratic risk that sufficiently offsets these gains in expected returns. Why then do we observe many concentrated foundations, and is portfolio concentration efficient? Chhabra (2015) documents that the wealthiest individuals employ heavy usage of leverage and concentration and believe that focusing on what they know is the least risky strategy, which makes the decision to uncouple a foundation from a founder's source of wealth more difficult. Yermack (2009) motivates an alternative, plausible hypothesis that foundations remain concentrated with donated stock to permit CEOs to continue to retain voting control of the donated shares. The limit on private foundation ownership of 20 percent of the voting stock of a corporation and the growth in size of the modern corporation both place meaningful constraints on the degree to which insiders can exploit private foundations to maintain corporate control (Worthy, 1975). Empirical evidence for the control hypothesis in the asset allocation and spending behavior of corporate foundations is mixed. Figure IA.3 shows that corporate foundations do hold slightly more equity than all other foundation structures besides trusts providing some evidence for this control hypothesis, while Figure IA.4 shows that corporate foundations actually have higher spending ratios than all foundation types besides operating foundations providing some counter evidence.

[40] $\text{Return}_{t:t-12}^{Concentrated}$ 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.

4.5 Investment Fees and Performance

Our results up to this point document that larger foundations outperform their smaller peers on a net return basis, and one channel for this phenomenon is variation in fee type and amounts across investors. The prior literature on investment fees and investment returns is scarce due to a lack of data granularity and non-mandated disclosure. For example, returns data are often reported net of any investment costs while the majority of performance fees paid on alternative assets is directly embedded into the limited partner's net asset value (NAV) and these fees reflect profit sharing rather than an actual cost.

In this section, we examine the connection between various investment fee categories, such as those related to internal processes (e.g., wages paid to CIOs or investment directors) or external fees (e.g., investment consulting) and investment returns for private foundations. We scrape the Form 990-PF filings via the Registry of Open Data which contains data for fiscal years 2009 to 2018 and is hosted by Amazon Web Services (now on ProPublica) in their original XML format. We retrieve the detailed breakdown of wages paid to internal investment staff, their pension contributions, legal and accounting fees, travel, printing, and occupancy expenses, other professional fees, and other investment expenses. From supporting documentation, we are able to discern that "other professional fees" include investment management fees paid to consultants or outsourced management companies (e.g., Mercer or Cambridge Associates), custody expenses (e.g., Mellon Custody), brokerage commissions, fees paid to managers in public markets (e.g., Blackrock Financial Management), and investment due diligence fees (e.g., Checkfundmanager LLC). "Other investment expenses" often include substantial "partnership investment expenses", "pass through other investment expenses", and "pass through expense from K-1s". We refer to "external fees" as the sum of "other professional fees" and "other investment fees" in the subsequent analysis.

The results in Panel A of Table 8 show that private foundations pay, on average, 90 basis points of their investment assets in disclosed investment fees. This figure is consistent with the 81 basis points paid by private foundations using the IRS SOI data. Part of this difference is likely a result of the slightly different sampling procedure and time period considered by the two data sources. Internal costs account for about a quarter of overall investment expenses, while external investment fees account for about 40 percent of total fees.[41]

Panel B of Table 8 analyzes the cross-sectional determinants of net returns as a function of lagged internal and external investment fees, controlling for size. Consistent with the results of Table 7 we find a negative relationship between past investment fees and current performance (column 1). The magnitude of the effect is large. A one percentage point increase in fees is associated with a 59 basis points decrease in future net returns. However, this negative relationship is driven by external

[41] We classify the remainder of investment fees as ancillary and miscellaneous fees. Ancillary fees include accounting and legal fees used to generate investment income. Miscellaneous fees include interest, taxes, depreciation, travel, printing, and occupancy costs (e.g., office space in New York City).

investment fees rather than investment wages (columns 2 and 3). Investment wages are correlated with positive future net returns, which indicates that foundations with in-house investment teams (e.g., a CIO) are better positioned to exploit market inefficiencies, minimize external fees, or both. Finally, ancillary fees related to investment management are a drag on performance. These fees are primarily prevalent across smaller foundations. Overall, we find that higher investment costs go hand-in-hand with lower future returns; however, we uncover a differential effect of investment fees on performance across internal and external investment costs.[42]

5 Spending Rate, Returns, and Capital Preservation

Our results so far indicate some foundations perform well and this is driven in large part by their asset allocation decisions. We document reach for yield among private foundations in declining interest rate environments, which is especially pronounced for more constrained foundations with lagged spending rates near their mandated distribution level. The current low-yield investment environment coupled with the level of required distributions has led private foundations' spending decisions to drive their investment policy allocations rather than vice versa. Ana Marshall, the Chief Investment Officer for the William and Flora Hewlett Foundation's $14 billion portfolio, summarizes these issues in a recent interview with Ted Seides:

> In a foundation, I have a mandate of 5 percent payout. So I have to have at least 70 percent 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).

While the optimal spending rate for a private foundation varies as a function of the foundation's purpose and time horizon, a sustainable spending requirement must be strictly less than a foundation's expected real rate of return for it to sustain its real principal in perpetuity.[43] If private foundations' ability to support charitable causes was perfectly elastic and there was no skill in grant-making, the sustainment of individual private foundations would be futile as long as aggregate giving was sustained. In reality, the charitable causes supported by individual private foundations are often targeted towards specific causes in geographically distinct areas, and the grant-making operations of private foundations requires significant expertise (Allen & McAllister, 2019). There is an increasing push to raise the minimum spending requirements for private foundations above five percent, but we emphasize the importance of flexibility in spending rates to increase the efficiency

[42]We acknowledge the limitations of our data, as we are not able to observe the full amount paid to managers, other than the one disclosed in the Form 990-PF.

[43]Dybvig and Qin (2021) suggest that the spending rate should be set equal to $s_{it} = \mathbb{E}[R_{it}] - \frac{1}{2}\sigma_{it}^2$, where $\mathbb{E}[R_{it}]$ is the expected annual real net return for private foundation i at time t and σ_{it}^2 is the variance of real net returns for foundation i at time t.

of charitable support moving forward.[44] Raising private foundation spending requirements might crowd out charitable giving or continue the trend towards other philanthropic vehicles with no spending requirements such as Donor-Advised Funds or 501(c)(4)'s with lower levels of monitoring. Additionally, setting a lower spending rate provides private foundations the flexibility to optimize their spending rate based on the urgency of the cause they support and support a cause in greater magnitude for a prolonged period of time.[45]

To make broader recommendations for maximizing the real value of private foundations' giving moving forward, we conduct a simulation study to examine how private foundations' real principal values are expected to change over the next 25- and 100-year periods under varying investment strategies. We sample from a multivariate, normal distribution made up of quarterly benchmark index returns and inflation rates from 1996 to 2016.[46] The simulated data uses the historical covariances among asset classes and their mean returns. We unsmooth the time series of illiquid alternative asset classes following Getmansky, Lo, and Makarov (2004). Panel A of Table 9 presents asset allocation weights for each of the four portfolios and each portfolio's expected nominal return and standard deviation.[47]

We simulate 10,000 paths for each portfolio. The real wealth distribution paths for each portfolio are created based on these simulated nominal returns and inflation. We assume foundations rebalance their portfolios quarterly, spend a constant rate of five percent of their average fair market value of net investment assets, and receive no donor contributions during the simulated period. Foundations also experience a time-varying inflation rate. Therefore, we are interested in the following dynamics of real wealth:

$$W_t = W_0 \prod_{t=1}^{T} (1 + r_t - s_t - \iota_t) \tag{6}$$

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

Our simulation results displayed in Panel B of Table 9 confirm the necessity of foundations to employ increasingly aggressive asset allocation strategies and to increase their reliance on alternative

[44] Billionaire John Arnold argues for increased giving from current founders to fund "riskier ventures than the government and private sector are willing to try, but the longer a foundation operates after donors' death, the more bureaucratic and risk-adverse it tends to get" (Levine, 2019). More specifically, the Institute for Policy Studies recommends increasing the required spending rate by private foundations to ten percent (Alvarez, 2022).

[45] In the context of a public foundation, Stanford's endowment spending rate is only 5 percent, but this giving supports 20 percent 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)

[46] Sampling from a period of high realized stock and bond returns in comparison to today's forward-looking expectations suggests these results provide an upper bound of foundation asset growth.

[47] We exclude cash from our analysis due to differences in the treatment of cash across foundations in our sample as these cash holdings could reflect short-term liquidity needs, the recent liquidation of portfolio holdings, or investments in short-term treasuries. The median foundation in our sample holds the equivalent of four percent of investment assets in cash.

assets for return diversification and growth potential. The first strategy consisting of asset allocation to only fixed income results in a private foundation sustaining its real principal base just 16 (3) percent of the time over a 25-year (100-year) time horizon. The average foundation under this investment strategy retains just 40 percent of its beginning real investment assets over a 100-year horizon due to charitable distributions outpacing real investment returns. Foundations under a 60/40 portfolio strategy do relatively well and finish the simulation period with about 115 percent of the real purchasing power of their initial principal over the longer horizon. Surprisingly, strategy (3) which heavily invests in domestic and international equity finishes the simulation period with higher growth than strategy (2), but also a higher likelihood (72 percent) of diminished principal over the 100-year time horizon versus 64 percent under the 60/40 portfolio. The significant improvement in simulated principal balances under portfolio strategy (4) reflects the benefit of investing in alternatives for diversification and growth. The average foundation under this strategy experiences has a 75 percent chance to sustain its real purchasing power. This portfolio's median growth in real invested principal of 151 percent results in just 25 (37) percent of investment paths experiencing a decline in real principal over the 100-year (25-year) time horizon.

The optimal spending rate for a private foundation likely results from a complex set of interactions between its strategic asset allocation, return (asset) volatility, mission, and time-horizon. The mission and goal of a nonprofit necessarily capture its rate of time preference for future expected consumption (e.g., the real spending on charitable goals). To solve for the optimal spending rate based on different risky portfolios, we choose the spending rate that maximizes the following CRRA utility:

$$\max U(c) = \mathbb{E}\Big[\sum_{t=0}^{\infty} \delta^t \frac{c^{1-\gamma}}{1-\gamma}\Big] \tag{7}$$

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 analysis we use various discount rates (e.g., δ) when computing the present value of charitable giving (Campbell & Viceira, 1999; Gilbert & Hrdlicka, 2015; Halem et al., 2022). The philanthropic missions supported by private foundations lend themselves to variation in discount rates as some charitable needs are more pressing than others. For example, private foundations seeking to eradicate poverty, hunger, or clean water crises would be rational to spend their current invested principal more aggressively in fighting these needs due to the high-value creation of these projects (lower δ). On the other hand, private foundations seeking to support inter-generational causes such as art and higher education should seek to solely maximize the present value of their distributions by selecting a spending rate near the optimal spending rate that can be supported over long periods (higher δ). It is important to note that many foundations already give in excess of the five percent mandate suggesting this reduced benchmark would not necessarily reduce charitable giving in the short-term. Instead, it would provide greater flexibility to private foundations to select a spending rate based on the urgency of the mission they support and the time horizon they seek to operate.

The expected life of a foundation is another important dimension to consider. Foundations that decide to live in perpetuity are willing to smooth out their spending over time in order to be sustainable. On the other hand, other foundations might decide to deplete their capital over a pre-determined time frame (e.g., The Bill & Melinda Gates Foundation will spend all its assets within 50 years of them both dying). Panel C of Table 9 reports the optimal spending rule across different investment strategies, rate of time preferences (i.e., mission), and horizons. As expected, a shorter time horizon increases the optimal spending rate. Foundations with less volatile returns spend more, as principal values can be sustained (Portfolios I and II). Notably, over long horizons (i.e., 100 years), the optimal spending rate is almost always strictly less than 5 percent. However, our simulations mask large variations in spending rates depending on the rate of time preference. For a discount rate $\delta = 0.94$, which mirrors the discount rate of the average university endowment (Gilbert & Hrdlicka, 2015), the optimal spending rate for a portfolio with alternative assets is about 4.10 percent which resembles the typical spending rate for colleges and universities (see Binfarè et al., 2023; Binfarè & Harris, 2022; Dahiya & Yermack, 2021).

In summary, our simulation results show the difficulty of reaching a five percent real return without increases in risk-taking, especially in the midst of a low-yield interest rate environment. We document large variation in optimal spending rates depending on the urgency of 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 five percent mandated spending rate which suggests shifting this threshold would allow foundations to better optimize their spending patterns without large changes to aggregate giving in the short-term.[48]

5.1 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 A.3 documents that giving from private foundations to DAFs was over $3 billion from 2010 to 2020 or about 0.5 percent of private foundation spending went towards

[48]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 percent of private foundations had incremental spending directed towards this crisis.

DAFs.[49,50]

A private foundation's support of donor-advised funds counts towards the five percent 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 A.7 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 which is consistent with a desire to smooth contributions rather than nefarious activity of private foundations.

5.2 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.[51] The results in the first two columns of Table A.8 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). Columns (3) and (4) show that private grant making foundations that have more

[49] 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

[50] 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 Foundation Charitable Trust.

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

flexible giving mandates have significantly higher response functions to observed needs stemming from exogenous changes in the need for philanthropic support.

6 Conclusions

Private foundations are created to provide intergenerational support to public charities and are influential due to both their level and efficiency of giving. The five percent minimum spending rule poses a constraint to private foundations' operations that has significant implications in better understanding how long-lived investors respond to operating constraints, especially in the midst of a low-yield environment.

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. We find that foundations with greater than $500 million in assets generate positive risk-adjusted returns, and this outperformance varies over time. The results show the importance of measuring investment returns over longer periods.

The inflexibility of the five percent minimum spending rule, despite large changes in the investment environment and substantial variation across foundations' time horizon and urgency of philanthropic causes, suggests there is a more efficient way to legislate the giving patterns of private foundations. Many private foundations already give in excess of the mandated spending rate suggesting their support for more pressing causes while their use of DAFs suggests the benefits of allowing further smoothing in giving. While we are unable to observe the discount rates that foundations place on their grant-making towards philanthropic efforts, we observe that private foundations increase their spending rates when the marginal benefit of charitable activity increases. Investigating the utility functions of infinitely-lived investors to optimize their giving to charitable efforts and the welfare effects between public and private philanthropy represents an exciting future area of research.

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Figure 1: Total Assets, Investment Assets, and Flows by Fiscal Year

This figure shows total assets and investment assets (left axis), and contributions and distributions (right axis) for private foundations from 1991 to 2016 as reported to the IRS, Form 990-PF. Investment assets includes government debt, corporate bonds, equity, alternative investments, and other investment assets. Figures are in billions of dollars.

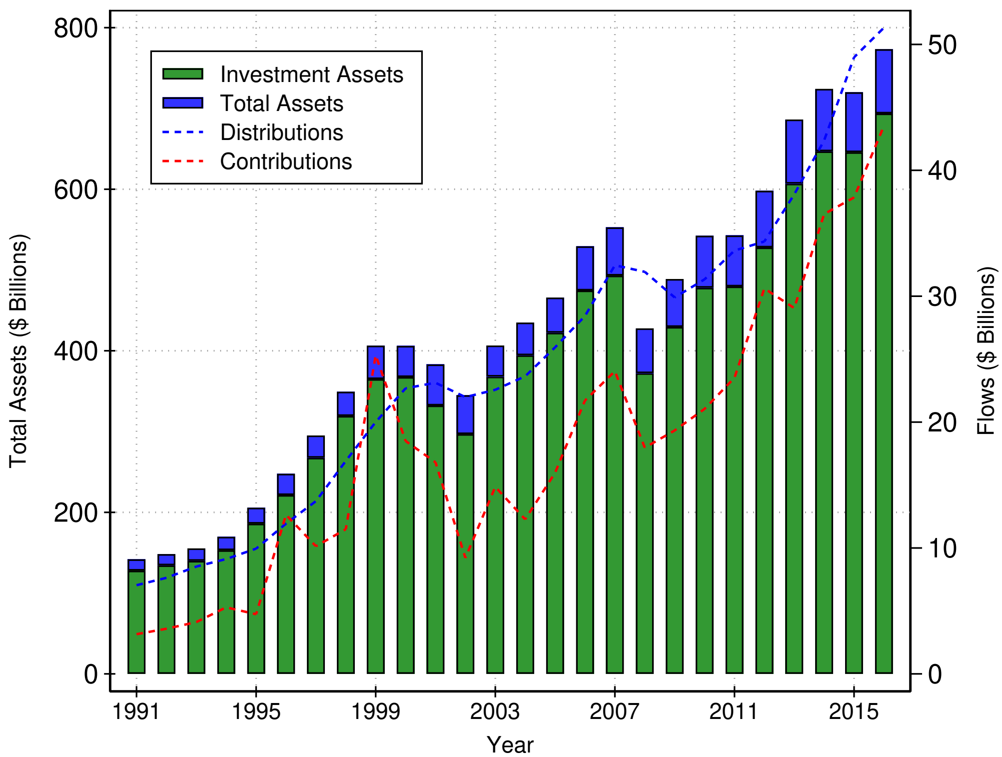

Figure 2: Asset Allocation Breakdown by Fiscal Year

This figure shows the asset allocations of private foundations to cash and savings, government bonds, corporate bonds, equity, alternatives (includes hedge funds, real estate, and private equity, and other alternative assets), and other (includes investments in land, buildings, equipment, and mortgage loans) from 1991 to 2016.

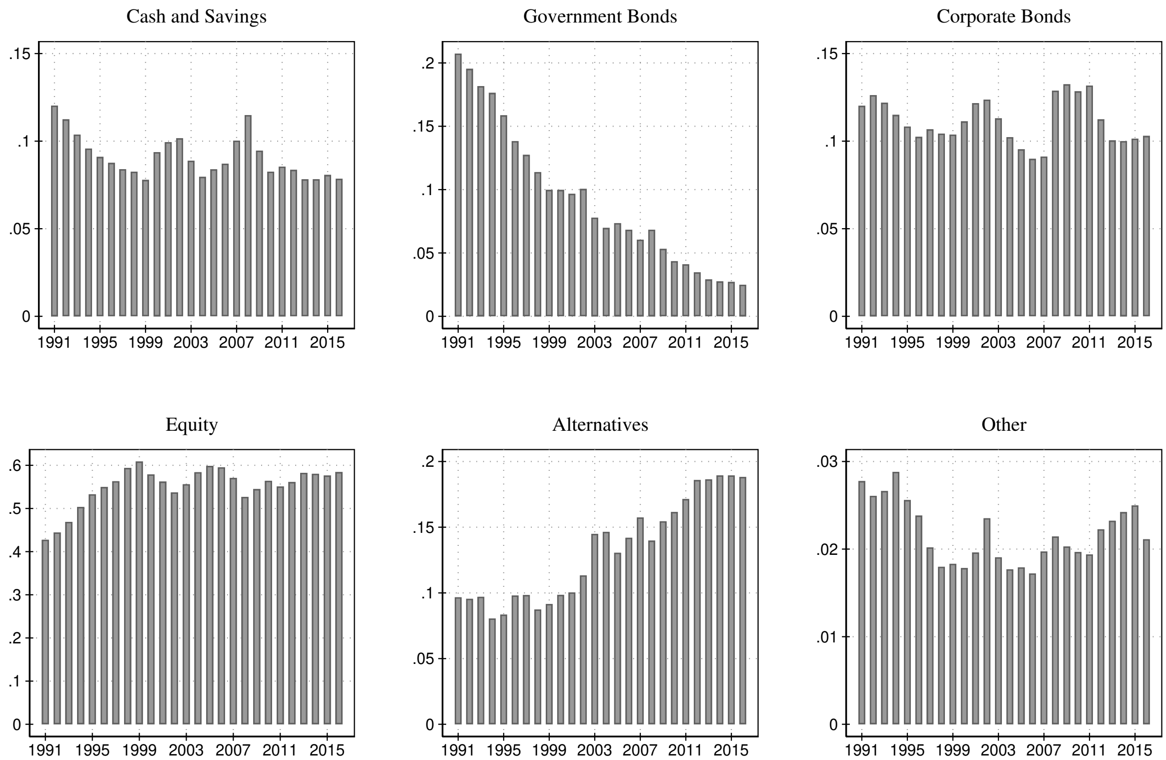

Figure 3: Investment Returns Comparison Fiscal Years 1991-2016

This figure shows the total value-weighted, equal-weighted, and median net returns of private foundations from fiscal years 1991 to 2016 versus a 60/40 portfolio composed of the CRSP Value-Weighted Index and the Bloomberg Aggregate Bond Index. Private foundation observations are weighted by their lagged total asset value. Figure only includes foundations with December fiscal month ends which includes 72 percent of reporting foundations.

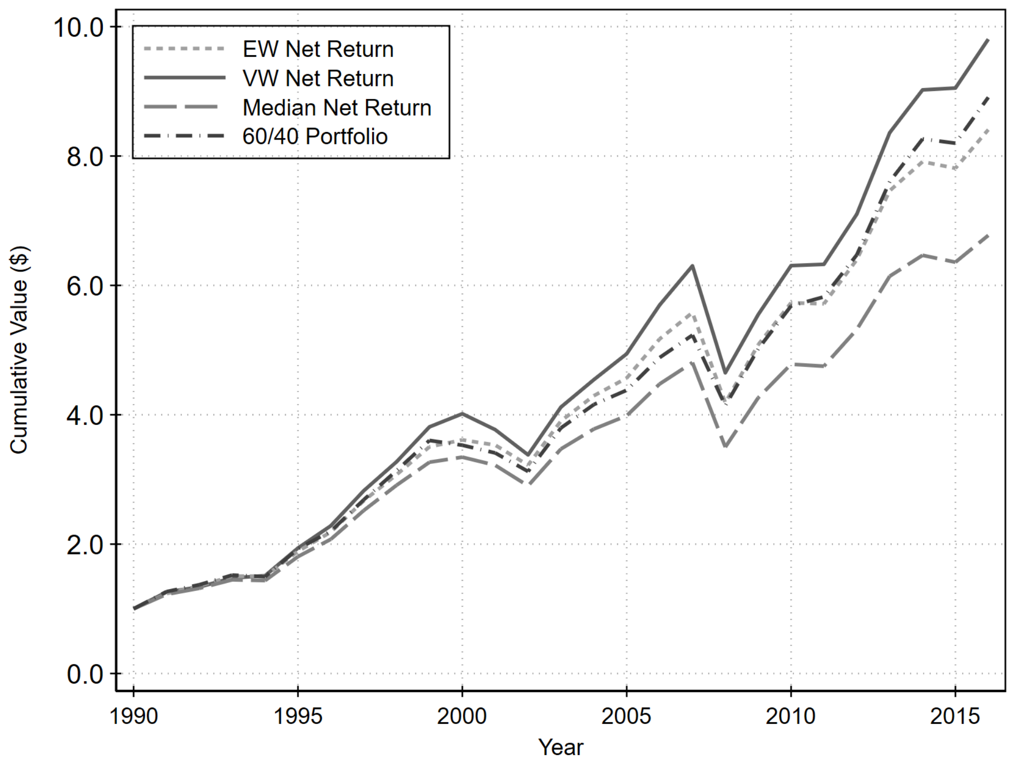

Figure 4: Investment Returns Comparison Fiscal Years 1991-2007 and 2008-2016
This figure shows the total value-weighted, equal-weighted, and median net returns of private foundations from fiscal years 1991 to 2007 and from 2008 to 2016 versus a 60/40 portfolio composed of the CRSP Value-Weighted Index and the Bloomberg Aggregate Bond Index. Private foundation observations are weighted by their lagged total asset value. Figure only includes foundations with December fiscal month ends which includes 72 percent of reporting foundations.

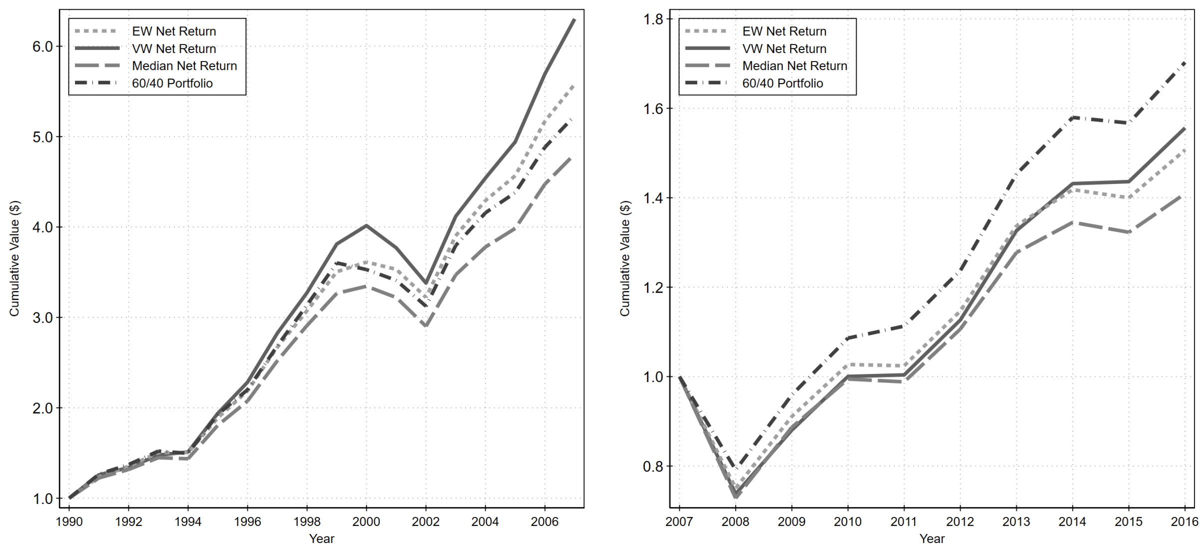

Table 1: Sample and Flows

This table reports the total number of private foundations (Total), the number of foundations entering the sample (Entry), the number of foundations exiting the sample (Exit), the total assets in billion of dollars of the reporting foundations, the total distributions in billions of dollars of the reporting foundations, the total contributions in billions of dollars of the reporting foundations, and the year-over-year percentage change in total assets, distributions, and contributions from 1991 to 2016. The total number of foundations in the current year equals the total number of foundations in the previous year plus the number that entered the sample in the current year minus the number that exited the sample in the current year.

Year	Flows			Total Assets		Distributions		Contributions	
	Total	Entry	Exit	$B	Δ (%)	$B	Δ (%)	$B	Δ (%)
1991	4196	-	-	141.9	-	7.0	-	3.2	-
1992	4341	556	411	148.3	4.5	7.6	8.3	3.6	13.8
1993	4176	587	752	155.4	4.8	8.5	11.7	4.1	14.6
1994	4869	1373	680	169.8	9.2	9.1	7.0	5.3	28.6
1995	5344	891	416	205.8	21.2	9.9	9.0	4.7	-10.5
1996	6330	1266	280	247.8	20.4	11.9	20.0	12.6	166.9
1997	7039	1190	481	295.2	19.1	13.7	15.0	10.1	-19.7
1998	7898	1947	1088	349.3	18.4	16.9	23.3	11.5	13.3
1999	7321	901	1478	406.4	16.3	20.0	18.3	25.3	120.2
2000	7459	760	622	406.1	-0.1	22.7	13.4	18.5	-26.9
2001	5992	474	1941	383.1	-5.7	23.1	1.9	16.8	-9.1
2002	5847	486	631	345.1	-9.9	22.0	-4.9	9.2	-45.2
2003	9419	3770	198	406.6	17.8	22.6	2.6	14.9	61.3
2004	10190	1248	477	435.0	7.0	23.6	4.8	12.3	-17.4
2005	10629	961	522	465.9	7.1	25.9	9.7	16.0	30.1
2006	11325	1179	483	529.3	13.6	28.4	9.6	21.7	35.9
2007	11499	893	719	552.8	4.4	32.5	14.2	24.0	10.7
2008	13099	3370	1770	427.8	-22.6	31.9	-1.6	18.0	-25.2
2009	14886	2363	576	488.9	14.3	29.9	-6.4	19.3	7.6
2010	15687	2119	1318	542.5	11.0	31.3	4.8	21.0	8.9
2011	15702	1334	1319	542.8	0.1	33.6	7.3	23.5	11.7
2012	16335	1695	1062	598.1	10.2	34.3	2.2	30.6	30.2
2013	17210	1992	1117	686.4	14.7	38.1	10.9	29.1	-5.1
2014	17595	1645	1260	724.3	5.5	42.4	11.3	36.5	25.7
2015	17339	1312	1568	720.1	-0.6	49.0	15.6	37.8	3.6
2016	17954	1922	1307	773.4	7.4	51.3	4.8	43.5	15.0

Table 2: Characteristics of Private Foundations

This table reports summary statistics for U.S. private foundations from 1991 to 2016. Panel A summarizes figures for total assets, flow, and characteristics of private foundations. Panel B summarizes figures for the share of investment assets allocated to cash (excluded from investment assets), government bonds, corporate bonds, equity, alternative investments, and other investments (land, buildings, equipments, and mortgage loans). Panel C summarizes the total net return of private foundations, dividend yields, realized and unrealized gains, and investment fees. Entries summarize data points across all private foundations and years, and report the number (N) of data points, mean value, standard deviation, percentile values (25, 50, 75), and the asset-weighted average. The Internet Appendix provides detailed variable descriptions.

	N	Mean	SD	25^{th}	Median	75^{th}	AUM^w
	Panel A: Assets, Flows, and Characteristics						
Total Assets ($M)	231,495	45.49	402.55	0.94	9.89	24.01	3,608.10
Investment Assets ($M)	231,495	41.07	373.90	0.81	7.32	21.27	3,330.16
Contributions ($M)	231,495	1.53	37.17	0.00	0.00	0.00	142.06
Contributions (% Assets)	231,495	2.76	9.84	0.00	0.00	0.02	3.29
Distributions ($M)	231,495	2.55	20.62	0.04	0.41	1.34	173.81
Distributions (% Assets)	231,495	6.43	6.73	4.10	4.91	6.08	5.51
Age (years)	231,495	22.65	19.96	7.00	16.00	34.00	33.94
Charitable Trust (%)	231,495	29.09	45.42	0.00	0.00	100.00	1.29
Operating (%)	231,495	4.05	19.72	0.00	0.00	0.00	7.78
Corporate (%)	231,495	0.87	9.28	0.00	0.00	0.00	0.92
	Panel B: Asset Allocation (%)						
Cash	231,495	7.79	12.41	1.62	3.74	7.98	6.04
Government Bonds	231,495	7.00	15.40	0.00	0.00	6.96	7.22
Corporate Bonds	231,495	11.29	16.23	0.00	3.72	17.72	7.64
Equity	231,495	56.93	31.05	35.54	61.85	82.35	53.05
Alternatives	231,495	14.99	27.39	0.00	0.00	16.19	24.25
Other	231,495	2.01	9.05	0.00	0.00	0.00	1.79
	Panel C: Investment Return and Fees (%)						
Total Net Return	231,495	8.32	13.76	1.39	8.46	14.94	10.10
Dividend Yield	231,495	3.28	1.99	2.17	2.86	3.87	2.57
Realized Gains	231,495	3.26	6.62	0.00	1.98	5.29	4.30
Unrealized Gains	231,495	2.04	13.80	-4.68	2.04	8.68	3.15
Investment Fees	231,495	0.81	0.84	0.28	0.63	1.06	0.58

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 asset class specified individually within each model. Independent variables include the size of the foundation, age of the foundation, investment fees, distributions from the foundation as a fraction of total assets, 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, whether a private foundation is a charitable trust, an operating foundation, or a corporate foundation. The Internet Appendix provides detailed variable descriptions. Fiscal year × 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.

	Gov. Bonds	Corp. Bonds	Equity	Alternatives
	(1)	(2)	(3)	(4)
Log(Assets)	0.01	-0.21***	0.37**	0.77***
	[0.07]	[0.06]	[0.17]	[0.15]
Log(Age)	0.29**	0.35**	0.62**	-0.88***
	[0.10]	[0.13]	[0.30]	[0.24]
Investment Fees	-0.64***	-0.51***	-3.75***	1.39***
	[0.09]	[0.11]	[0.26]	[0.21]
Distributions (% Assets)	0.04***	0.01	-0.16***	0.02
	[0.01]	[0.01]	[0.03]	[0.02]
Contributions (% Assets)	-0.03***	-0.07***	-0.19***	0.04***
	[0.01]	[0.01]	[0.02]	[0.01]
Log(Paid)	-0.56***	-0.39*	-2.94***	3.63***
	[0.18]	[0.20]	[0.73]	[0.72]
Log(Unpaid)	-0.20	-1.12***	-1.08***	1.87***
	[0.12]	[0.13]	[0.27]	[0.26]
Trust	-1.42***	3.13***	2.14**	1.32
	[0.40]	[0.50]	[0.95]	[0.78]
Operating Foundation	0.44	-0.46	-8.08***	3.86***
	[0.50]	[0.47]	[1.07]	[1.07]
Corporate Foundation	0.40	0.54	1.82	-3.00*
	[0.88]	[0.88]	[1.84]	[1.54]
Year × NTEE Fixed Effects	Yes	Yes	Yes	Yes
Adj-R^2	0.10	0.03	0.04	0.04
Observations	231495	231495	231495	231495

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, alternatives, 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 fiscal year. Independent variables include the size of the foundation, age of the foundation, investment fees, contributions to the foundation as a fraction of assets, the number of employees that earn more than fifty thousand dollars, the number of unpaid directors/trustees, and the lagged dependent variable. QD_{t-1} is the ratio of qualified distributions to distributable amount based on the five percent minimum spending rule after all adjustments required by the IRS. The Internet Appendix provides detailed variable descriptions. Fund 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.

	Equity		Alternatives		Gvt. Bonds	
	(1)	(2)	(3)	(4)	(5)	(6)
Panel A: Reach for Yield and Minimum Spending Rule						
$Yield_{t-1}$	-0.73***	-0.88***	-0.59***	-0.62***	0.88***	0.94***
	[0.11]	[0.13]	[0.15]	[0.17]	[0.09]	[0.09]
QD_{t-1}		-0.01***		-0.00		0.00*
		[0.00]		[0.00]		[0.00]
$Yield_{t-1} \times QD_{t-1}$		0.11***		0.02		-0.05***
		[0.04]		[0.02]		[0.02]
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Fund Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Adj-R^2	0.70	0.70	0.68	0.68	0.59	0.73
Observations	209922	209922	209922	209922	209922	209922
Panel B: Reach for Yield by Large versus Small Foundations						
	$\geq$ 50M	$<$ 50M	$\geq$ 50M	$<$ 50M	$\geq$ 50M	$<$ 50M
$Yield_{t-1}$	0.01	-1.17***	-1.34***	-0.32	0.93***	0.94***
	[0.17]	[0.15]	[0.18]	[0.19]	[0.12]	[0.09]
QD_{t-1}	-0.00	-0.01***	-0.00**	0.00	0.00	0.00*
	[0.00]	[0.00]	[0.00]	[0.00]	[0.00]	[0.00]
$Yield_{t-1} \times QD_{t-1}$	0.00	0.13***	0.12**	-0.00	-0.04	-0.05**
	[0.07]	[0.04]	[0.05]	[0.03]	[0.03]	[0.02]
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Fund Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Adj-R^2	0.73	0.69	0.78	0.67	0.75	0.73
Observations	31639	177818	31639	177818	31639	177818

Table 5: Risk-adjusted Returns of Private Foundations

This table reports risk-adjusted alpha estimates for foundations within the same size-bucket and across all foundations. The table reports coefficients and bootstrapped p-values of private foundations' risk-adjusted returns at various percentile ranges estimated using a four-factor model for each foundation with a minimum of seven years of valid returns data. Bootstrapped p-values are computed following the methodology of Kosowski et al. (2006). Size groups are formed according to each private foundation's average inflation-adjusted fair value of total assets. Very large foundations have AUM greater than \$500 million, large between \$250 million and \$500 million, medium-large between \$50 million and \$250 million, medium-small between \$10 million and \$50 million, small between \$1 million and \$10 million, and very-small less than \$1 million. 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).

	All	V. Large	Large	M. Large	M. Small	Small	V. Small
	Kosowski et al. (2006) Bootstrap Method						
Percentile							
1	-15.6	-15.1	-12.4	-17.0	-19.1	-14.2	-11.6
	0.00	0.16	0.45	0.00	0.00	0.00	0.00
5	-6.4	-5.7	-4.7	-6.6	-7.5	-6.2	-5.9
	0.00	0.54	0.77	0.02	0.00	0.00	0.00
10	-4.7	-2.9	-2.6	-4.3	-4.7	-4.7	-4.8
	0.00	0.96	0.98	0.00	0.00	0.00	0.00
25	-2.6	-1.0	-1.1	-1.8	-2.2	-2.6	-3.1
	0.00	1.00	0.92	0.00	0.00	0.00	0.00
Median	-0.8	0.8	0.5	0.0	-0.3	-0.9	-1.6
	0.00	0.00	0.00	0.61	0.00	0.00	0.00
75	1.1	3.1	3.1	2.7	2.1	1.0	-0.3
	0.00	0.00	0.00	0.00	0.00	0.00	0.00
90	4.6	6.8	6.3	6.3	6.1	4.6	1.3
	0.00	0.00	0.00	0.00	0.00	0.00	1.00
95	8.2	10.1	8.4	9.8	9.7	8.3	3.7
	0.00	0.00	0.01	0.00	0.00	0.00	0.00
99	18.5	21.9	19.6	17.0	20.9	18.1	12.6
	0.00	0.00	0.09	0.00	0.00	0.00	0.00
Mean^{EW}	-0.4	1.4	1.3	0.6	0.2	-0.4	-1.5
	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mean^{VW}	1.0	1.7	1.4	0.6	0.2	-0.3	-1.4
	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Table 6: Performance Persistence of Private Foundations

This table reports the performance persistence of returns and risk-adjusted performance of size-adjusted returns. Panel A reports the performance persistence transition matrix of private foundations based on their previous year size-adjusted performance decile from 1991 to 2016. 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 results of the Fama-MacBeth regressions (Fama & MacBeth, 1973) of lagged returns on future returns using various holding periods and horizons. The response variable is a foundation's net return in the period specified in the left-hand time index which is regressed on the foundation's previous period net returns in Columns (1), (2), and (3). Columns (4) and (5) use size-adjusted and 60/40 (equity and fixed-income) benchmark-adjusted returns. We use the Fama and French (1993) model augmented with the momentum factor of Carhart (1997). The brackets report Newey-West standard errors following Newey and West (1994).

Panel A: Performance Persistence Matrix

Previous	Current Return Decile				
	(1)	(2)	(5)	(9)	(10)
(1)	22.0	11.3	5.3	11.4	19.3
(2)	10.8	14.9	8.8	9.8	8.5
(5)	5.0	8.8	14.6	6.7	4.0
(9)	10.1	9.2	7.2	16.1	12.7
(10)	17.9	8.2	4.6	13.8	26.6

Panel B: Fama-MacBeth Persistence Regressions

	Net Returns	Pre 2008	Post 2008	Size-Adjusted	60/40
$R_{t-1:t} \rightarrow R_{t:t+1}$	0.08***	0.11***	0.01	0.08***	0.08***
	[0.02]	[0.03]	[0.04]	[0.02]	[0.02]
$R_{t-1:t} \rightarrow R_{t+1:t+2}$	0.16***	0.25***	0.04	0.15***	0.14***
	[0.05]	[0.05]	[0.07]	[0.04]	[0.04]
$R_{t-2:t} \rightarrow R_{t:t+1}$	0.05**	0.08***	-0.00	0.06***	0.06***
	[0.02]	[0.02]	[0.03]	[0.02]	[0.02]
$R_{t-2:t} \rightarrow R_{t+1:t+2}$	0.11***	0.16***	0.05	0.12***	0.12***
	[0.03]	[0.03]	[0.04]	[0.03]	[0.03]

Table 7: Risk-Adjusted Returns and Characteristics of Private Foundations

This table reports OLS regression coefficients and standard errors for the relationship between measures of a private foundation's investment performance and a foundation's characteristics. The dependent variable is either a private foundation's net return or a foundation's Sharpe Ratio calculated over a four-year rolling window. Columns (1) and (2) include all private foundations while columns (3) to (6) include a subset of foundations with investment assets greater than $250 million. 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, whether a private foundation is a trust, operating foundation, or corporate foundation, and whether a foundation is concentrated (defined as having a single stock that makes up greater than 30 percent of portfolio holdings). $\text{Return}^{\text{Concentrated}}_{t:t-12}$ is the total return for the concentrated stock during the current fiscal year. All other independent variables are measured at the end of the previous fiscal year. The Internet Appendix provides detailed variable description. Fiscal year × investment style fixed effects are included. Investment style segments private foundations into eight groups based on their time-varying asset allocation. 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.

	Full Sample		Sample > 250M			
	Net Return	SR	Net Return		SR	
	(1)	(2)	(3)	(4)	(5)	(6)
Log(Assets)	-0.05	0.01	-0.89***	-0.80***	-0.02	-0.02
	[0.06]	[0.00]	[0.26]	[0.24]	[0.02]	[0.02]
Log(Age)	0.08	0.02**	-0.05	-0.04	0.03	0.03
	[0.08]	[0.01]	[0.21]	[0.20]	[0.02]	[0.02]
Investment Fees	-0.22**	-0.05***	0.08	0.11	0.01	0.01
	[0.10]	[0.01]	[0.27]	[0.28]	[0.03]	[0.03]
Distributions (% Assets)	0.04***	-0.00	0.02	0.02	0.00	-0.00
	[0.01]	[0.00]	[0.03]	[0.04]	[0.00]	[0.00]
Contributions (% FV)	0.00	-0.00*	-0.01	-0.01	-0.00	-0.00
	[0.00]	[0.00]	[0.01]	[0.01]	[0.00]	[0.00]
Log(Paid)	0.38***	0.03**	0.56***	0.49***	0.04**	0.04**
	[0.13]	[0.01]	[0.14]	[0.13]	[0.01]	[0.01]
Log(Unpaid)	0.27***	0.00	0.05	0.08	-0.01	-0.01
	[0.09]	[0.01]	[0.14]	[0.14]	[0.01]	[0.01]
Trust	-1.00***	-0.03	-0.83	-0.90	0.16**	0.16**
	[0.20]	[0.02]	[0.72]	[0.79]	[0.06]	[0.06]
Operating Foundation	1.36***	0.10***	-0.99	-0.87	-0.08	-0.07
	[0.41]	[0.03]	[0.73]	[0.71]	[0.06]	[0.06]
Corporate Foundation	0.15	-0.02	0.93	0.99	-0.07	-0.06
	[0.36]	[0.02]	[1.22]	[1.22]	[0.10]	[0.10]
Concentrated			1.58**	-1.57	-0.12	-0.25**
			[0.76]	[1.05]	[0.10]	[0.11]
$\text{Return}^{\text{Concentrated}}_{t:t-12}$				0.26***		0.01***
				[0.08]		[0.00]
Year × Style Fixed Effects						
Adj-R^2	0.46	0.44	0.43	0.46	0.40	0.41
Observations	198804	149097	9759	9759	8257	8257

Table 8: Investment Fees and Future Performance of Private Foundations

This table shows the relationship between investment performance and investment fees. Panel A decomposes total investment fees into internal, external, ancillary, and miscellaneous fees as a percentage of total investment assets. Panel B reports OLS regression coefficients and standard errors for the relationship between private foundations' investment performance and investment fees. The dependent variable is a foundation's total net investment return. Independent variables include total investment fees, internal investment fees paid, external investment fees paid for professional services and other expenses, ancillary, and miscellaneous fees, and the natural logarithm of total investment assets. Ancillary fees include accounting and legal fees used to generate investment income. Miscellaneous fees (omitted to avoid multicollinearity) include interest, taxes, depreciation, travel, printing, and occupancy costs. All independent variables are measured at the end of the previous fiscal year. The Internet Appendix provides detailed variable description. Fiscal year × investment style fixed effects are included. Investment style segments private foundations into eight groups based on their time-varying asset allocation. Standard errors are adjusted for clustering at the foundation organization level. ***, **, * correspond to statistical significance at the 1%, 5%, and 10% level, respectively.

	Panel A: Summarized Investment Fees				
	Total	Internal	External	Ancillary	Misc.
Fees (% Inv. Assets)	0.90	0.25	0.44	0.14	0.06
	Panel B: Investment Fees and Performance				
	(1)	(2)	(3)	(4)	(5)
Total Inv. Fees	-0.59***				
	[0.09]				
Investment Wages		0.69*			0.49
		[0.32]			[0.34]
External Fees			-0.63***		-0.51***
			[0.11]		[0.13]
Ancillary Fees				-2.16***	-2.01***
				[0.21]	[0.21]
Log(AUM)	0.46***	0.56***	0.55***	0.41***	0.46***
	[0.06]	[0.07]	[0.06]	[0.05]	[0.06]
Year × Style Fixed Effects	Yes	Yes	Yes	Yes	Yes
Adj.-R^2	0.32	0.32	0.32	0.32	0.33
Observations	149387	149387	149387	149387	149387

Table 9: Investment Performance and Capital Preservation

This table reports the portfolio weights, distribution of real investment paths for the four portfolio scenarios using 10,000 simulations over different horizons h, and optimal spending rates under different rate of time preference δ. Panel A displays the asset allocation across the four different portfolios and each portfolio's mean return and standard deviation. Panel B summarizes percentiles of real wealth after h years. Each portfolio begins the simulation with one dollar of real principal. Real principal values are computed by subtracting five percent for a portfolio's required distributions and subtracting inflation from a portfolio's nominal return. We bootstrap inflation and returns simultaneously. $\mathbb{E}(W_T)$ represents the average foundation's real asset balance at the end of the horizon period. $\mathbb{P}(W_T < 1)$ represents the proportion of foundations that end the horizon period with a real principal value less than 1. Panel C summarizes the optimal spending rule that maximizes CRRA utility with $\gamma = 4$ and for various δ values, horizons h, and portfolios.

	I	II	III	IV
	Panel A: Portfolio Weights			
Corporate Bonds	0.50	0.20	0.05	0.05
Government Bonds	0.50	0.20	0.05	0.05
Domestic Equity	-	0.60	0.60	0.30
International Equity	-	-	0.30	0.10
Hedge Funds	-	-	-	0.20
Private Equity	-	-	-	0.15
Venture Capital	-	-	-	0.05
Real Estate	-	-	-	0.05
Commodities	-	-	-	0.05
Expected Return (%)	6.17	6.89	6.33	8.12
Standard Deviation (%)	4.69	9.37	15.21	12.86

	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}	0.48	0.14	0.41	0.13	0.22	0.03	0.43	0.27
25^{th}	0.63	0.24	0.66	0.37	0.46	0.14	0.80	0.99
50^{th}	0.76	0.34	0.91	0.72	0.79	0.40	1.25	2.51
75^{th}	0.92	0.49	1.28	1.38	1.35	1.15	1.96	6.00
95^{th}	1.19	0.84	2.04	3.56	2.88	5.44	3.68	21.69
$\mathbb{E}(W_T)$	0.79	0.40	1.03	1.15	1.08	1.42	1.55	5.91
$\mathbb{P}(W_T < 1)$	0.84	0.97	0.58	0.64	0.61	0.72	0.37	0.25
	Panel C: Optimal Spending Rule (s^* %)							
$\delta = 0.90$	7.60	5.30	7.45	5.05	6.10	3.05	7.40	4.95
$\delta = 0.92$	7.30	4.75	7.15	4.55	5.85	2.60	7.10	4.45
$\delta = 0.94$	7.00	4.25	6.85	4.05	5.70	2.20	6.80	3.95
$\delta = 0.96$	6.75	3.80	6.60	3.55	5.50	2.00	6.55	3.45

Appendix

Figure A.1: Investment Return, Dividend Yield, and Realized Gains

This figure shows the total net investment return, dividend yield, and realized gains for private foundations from 1991 to 2016 (displayed as decimals). Data to compute return measures come from the IRS, Form 990-PF.

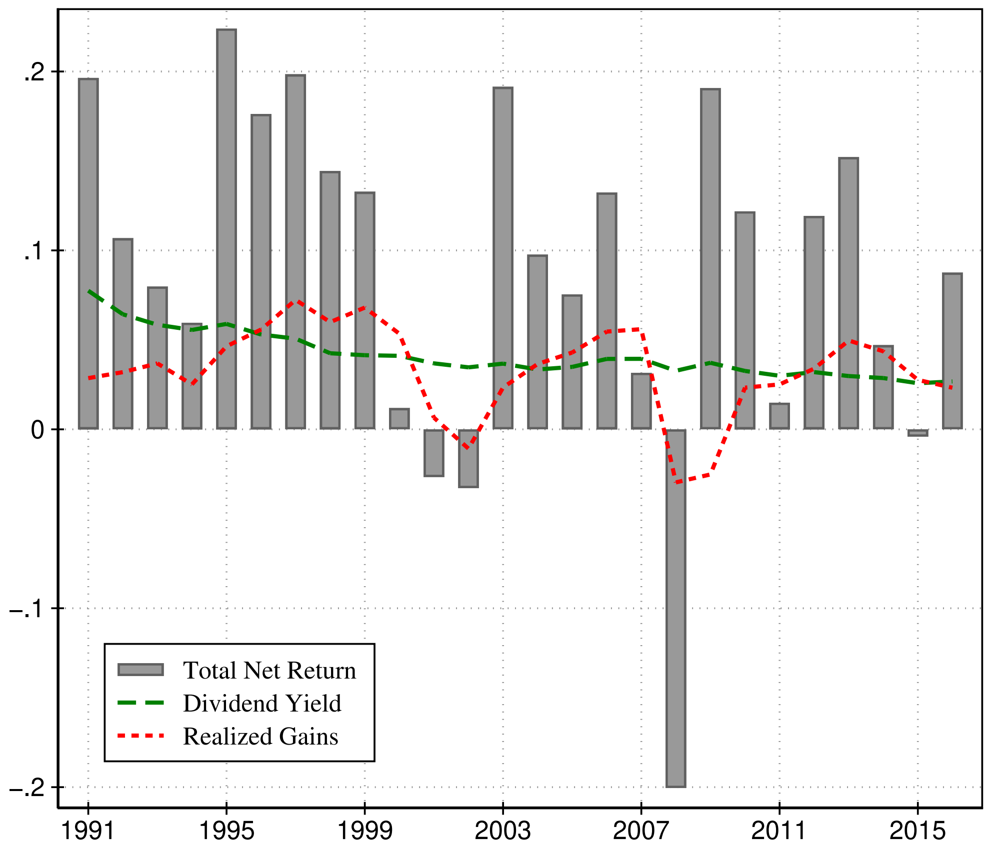

Figure A.2: Investment Return Decomposition and Fees

This figure shows total unrealized gains and losses on investment (top-left panel), investment management fees (top-right panel), standard deviation of total net return (bottom-left panel), and Sharpe ratio (bottom-right panel) for private foundations from 1991 to 2016. The bottom panels are based on a four-year rolling window to compute standard deviation of returns. We use the annualized 3-month Treasury Bill as the risk-free rate.

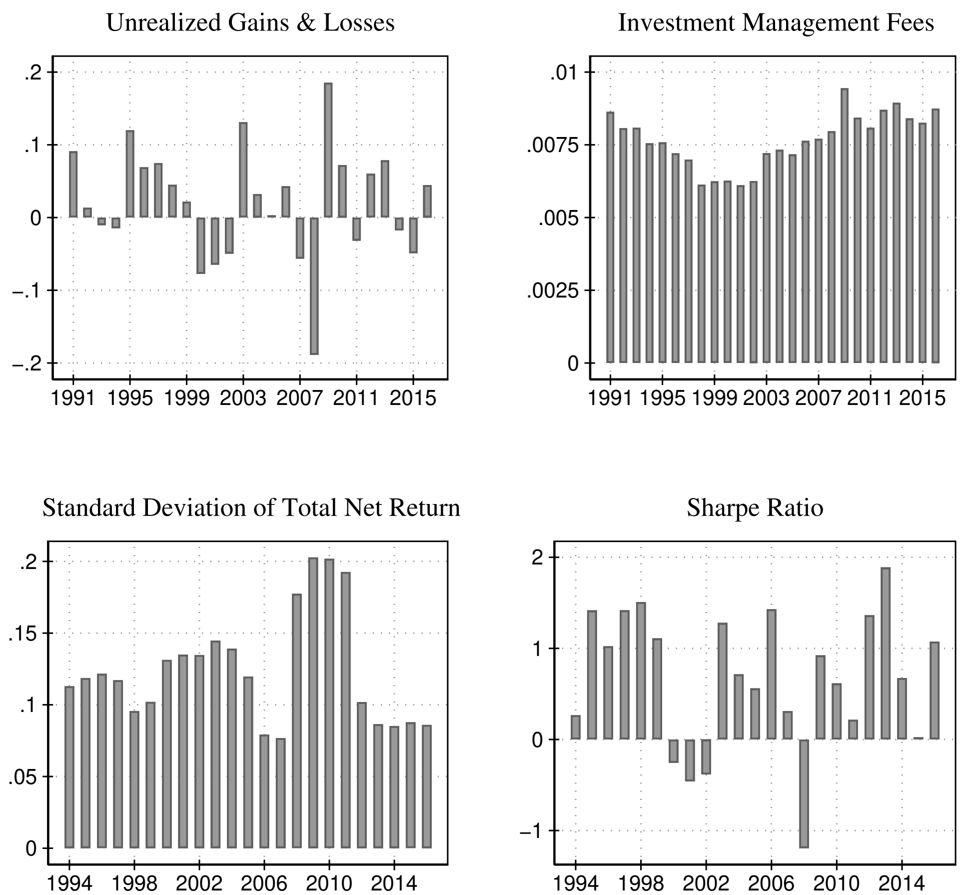

Figure A.3: Gifts to Donor-Advised Funds (DAFs) Over Time

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.

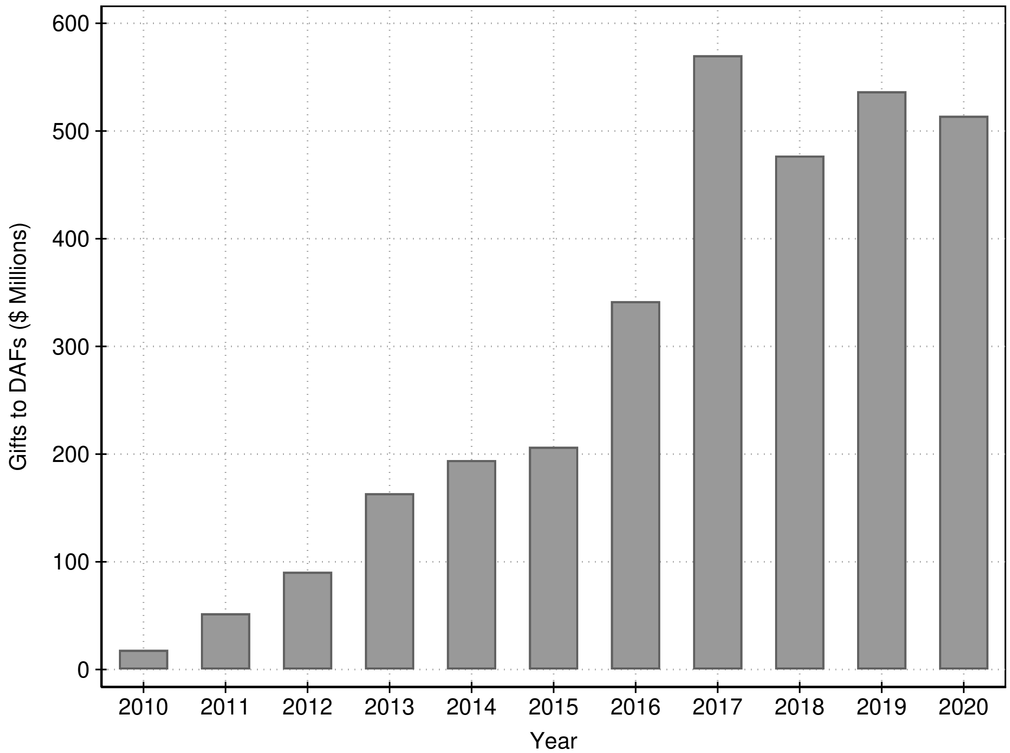

Table A.1: Asset Allocation and Investment Performance of Private Foundations by Size

This table reports summary statistics for private foundations' asset allocation and investment returns from 1991 to 2016 by size buckets. Panel A summarizes asset allocation to cash (excluded from investment assets), government bonds, corporate bonds, equity, alternative investments, and other investments scaled by total investment assets plus cash. Panel B summarizes the total net return of private foundations, dividend yields, realized and unrealized gains, and investment fees. Size groups are formed according to each private foundation's inflation-adjusted fair value of investment assets at the end 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	3388	5.17	3458	6.48	28804	7.42	83606	8.21	56678	8.00	55561	7.37
Government Bonds	3388	6.74	3458	6.51	28804	8.22	83606	7.78	56678	7.35	55561	4.88
Corporate Bonds	3388	7.24	3458	8.57	28804	9.31	83606	10.39	56678	11.74	55561	13.62
Equity	3388	53.61	3458	53.19	28804	54.23	83606	56.65	56678	59.35	55561	56.71
Alternatives	3388	25.04	3458	23.18	28804	18.68	83606	14.86	56678	11.36	55561	15.84
Other Assets	3388	2.20	3458	2.07	28804	2.13	83606	2.13	56678	2.19	55561	1.58
Panel B: Investment Returns, Risk, and Fees												
Total Net Return	3388	10.62	3458	10.40	28804	9.75	83606	8.37	56678	8.58	55561	6.97
Dividend Yield	3388	2.42	3458	2.78	28804	3.05	83606	3.19	56678	3.58	55561	3.32
Realized Gains	3388	4.70	3458	4.57	28804	3.99	83606	3.53	56678	3.19	55561	2.38
Unrealized Gains	3388	3.38	3458	2.90	28804	2.55	83606	1.66	56678	2.15	55561	2.12
Investment Fees	3388	0.58	3458	0.62	28804	0.64	83606	0.72	56678	0.82	55561	1.06

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

This table reports the reconciliation process of comparing the investment return performance of private foundations' returns from their audited financial statements and the returns computed using the 990-PF. The list includes 29 of the largest private foundations measured by total fair value of investment assets with publicly released audited financial statements within the last ten years. Investment assets are measured in millions of dollars while the audited and 990-PF columns denote foundations' investment return performance in percentage points.

Private Foundation	Investment Assets ($M)	Audited	990-PF
Lilly Endowment Inc	15094.34	26.27	26.35
Ford Foundation	12652.56	0.20	0.22
Robert Wood Johnson Foundation	10780.67	3.91	3.96
William and Flora Hewitt Foundation	9713.04	4.08	4.09
David and Lucile Packard Foundation	7083.27	-0.32	-0.29
MacArthur Foundation	6824.10	10.56	10.53
Andrew W Mellon Foundation	6518.25	0.83	0.85
John D. and Catherine T. MacArthur Foundation	6440.08	-1.61	-1.69
Gordon and Betty Moore Foundation	6261.88	-0.90	-0.90
Kresge Foundation	3623.40	-1.74	-1.79
Carnegie Foundation	3572.41	7.71	7.72
Duke Foundation	3568.45	2.91	2.96
Mott Foundation	2994.97	2.24	2.22
Margaret A. Cargill Foundation	2874.53	-2.54	-2.51
Casey Foundation	2522.03	-2.25	-2.18
Conrad Hilton Foundation	2366.28	11.66	11.51
Richard King Mellon Foundation	2348.34	-1.69	-1.68
James Irvine Foundation	2241.86	3.49	3.49
McKnight Foundation	2235.38	-3.83	-3.97
Ewing Marion Kauffman Foundation	2143.49	6.96	6.95
John S. and James L. Knight Foundation	2095.41	-4.15	-4.16
Doris Duke Foundation	1757.11	1.79	1.80
Alfred P. Sloan Foundation	1730.05	-2.98	-2.88
Moody Foundation	1688.87	8.87	9.14
The Annenberg Foundation	1559.29	15.00	15.00
Rockefeller Foundation	1134.92	-1.37	-0.99
Bush Foundation	897.45	5.44	5.50
The Henry Luce Foundation	826.52	-0.93	-0.93

Table A.3: 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 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 fiscal year. Independent variables include the size of the foundation, age of the foundation, investment fees, contributions to the foundation as a fraction of assets, the number of employees that earn more than fifty thousand dollars, the number of unpaid directors/trustees. QD_{t-1} is the ratio of qualified distributions to distributable amount based on the 5 percent minimum spending rule after all adjustments required by the IRS. The Internet Appendix provides detailed variable descriptions. Fund 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.

	Equity		Alternatives		Government Bond	
	(1)	(2)	(3)	(4)	(5)	(6)
	Panel A: Reach for Yield and Minimum Spending Rule					
$Yield_{t-1}$	-1.43***	-1.67***	-1.01***	-1.07***	2.06***	2.18***
	[0.23]	[0.26]	[0.18]	[0.20]	[0.22]	[0.22]
QD_{t-1}		-0.01***		-0.00		0.00***
		[0.00]		[0.00]		[0.00]
$Yield_{t-1} \times QD_{t-1}$		0.18***		0.05		-0.09***
		[0.05]		[0.04]		[0.02]
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Fund F.E.	Yes	Yes	Yes	Yes	Yes	Yes
Adj-R^2	0.58	0.58	0.59	0.59	0.59	0.59
Observations	209922	209922	209922	209922	209922	209922
	Panel B: Reach for Yield by Large versus Small Foundations					
	$\geq$ 50M	$<$ 50M	$\geq$ 50M	$<$ 50M	$\geq$ 50M	$<$ 50M
$Yield_{t-1}$	0.22	-2.17***	-2.99***	-0.49**	2.12***	2.13***
	[0.33]	[0.30]	[0.37]	[0.22]	[0.24]	[0.23]
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]
$Yield_{t-1} \times QD_{t-1}$	0.03	0.19***	0.24***	0.01	-0.07	-0.10***
	[0.10]	[0.05]	[0.07]	[0.04]	[0.06]	[0.03]
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Fund F.E.	Yes	Yes	Yes	Yes	Yes	Yes
Adj-R^2	0.60	0.59	0.67	0.58	0.61	0.60
Observations	31639	177818	31639	177818	31639	177818

Table A.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 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 fiscal year. Independent variables include the size of the foundation, age of the foundation, investment fees, contributions to the foundation as a fraction of assets, the number of employees that earn more than fifty thousand dollars, the number of unpaid directors/trustees, and the lagged dependent variable. QD_{t-1} is the ratio of qualified distributions to distributable amount based on the 5 percent minimum spending rule after all adjustments required by the IRS. $DY/Distributions_{t-1}$ is the ratio of a foundation's dividend yield to its distributions. The Internet Appendix provides detailed variable descriptions. Fund 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.

	Equity			Government Bond		
	(1)	(2)	(3)	(4)	(5)	(6)
$Yield_{t-1}$	-0.73***	-0.88***	-0.45***	2.04***	0.94***	0.73***
	[0.11]	[0.13]	[0.13]	[0.22]	[0.09]	[0.10]
QD_{t-1}		-0.01***	-0.01**		0.00*	0.00*
		[0.00]	[0.00]		[0.00]	[0.00]
$Yield_{t-1} \times QD_{t-1}$		0.11***	0.10**		-0.05***	-0.05***
		[0.04]	[0.04]		[0.02]	[0.02]
$DY/Distributions_{t-1}$			0.01***			-0.00
			[0.00]			[0.00]
$Yield_{t-1} \times DY/Distributions_{t-1}$			-0.24***			0.08**
			[0.06]			[0.04]
$QD_{t-1} \times DY/Distributions_{t-1}$			0.01**			-0.01***
			[0.00]			[0.00]
$Yield_{t-1} \times QD_{t-1} \times DY/Distributions_{t-1}$			-0.32***			0.21***
			[0.09]			[0.04]
Fund F.E.	Yes	Yes	Yes	Yes	Yes	Yes
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Adj-R^2	0.70	0.70	0.70	0.59	0.73	0.73
Observations	209922	209922	209922	209922	209922	209922

Table A.5: Performance Attribution

This table reports OLS regression coefficients and standard errors capturing the performance attribution based on the net return performance of private foundations in comparison to benchmark performance conditional on foundation size. The table presents a measure of alpha based on the observed return and estimated loadings to benchmark asset classes which include U.S. equity (Russell 3000), U.S. corporate bonds (Bloomberg US Aggregate Bond Index), international equity (MSCI ACWI ex USA Index), hedge funds (HFRI Fund-Weighted Composite Index), and a portfolio of private equity (5/6) and venture capital (1/6) (CA Private Equity/Venture Capital). Weights are constrained to be greater than 0 and to sum to 1. Size groups are formed according to each private foundation's inflation-adjusted fair value of investment assets at the end of the year. 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	0.64***	0.49***	0.45***	0.45***	0.66***	0.52***	0.48***	0.50***	0.62***	0.50***	0.47***	0.47***
	[0.01]	[0.02]	[0.02]	[0.02]	[0.01]	[0.02]	[0.02]	[0.02]	[0.00]	[0.01]	[0.01]	[0.01]
BB Aggregate	0.36***	0.35***	0.20***	0.22***	0.34***	0.33***	0.23***	0.22***	0.38***	0.37***	0.26***	0.26***
	[0.01]	[0.01]	[0.02]	[0.02]	[0.01]	[0.01]	[0.02]	[0.02]	[0.00]	[0.00]	[0.01]	[0.01]
ACWI ex-US		0.16***	0.07***	0.06***		0.16***	0.10***	0.09***		0.13***	0.07***	0.07***
		[0.02]	[0.02]	[0.02]		[0.01]	[0.02]	[0.02]		[0.01]	[0.01]	[0.01]
HFRI Fund-Weighted			0.28***	0.21***			0.18***	0.20***			0.21***	0.21***
			[0.03]	[0.04]			[0.03]	[0.03]			[0.01]	[0.01]
CA Private Equity/Venture Capital				0.06***				-				-
				[0.02]				-				-
Alpha (bp)	1.38***	1.84***	1.23***	1.03***	0.94***	1.40***	1.04***	0.89***	0.86***	1.18***	0.80***	0.75***
	[0.21]	[0.21]	[0.22]	[0.25]	[0.19]	[0.19]	[0.20]	[0.22]	[0.07]	[0.07]	[0.07]	[0.07]
RMSE	0.114	0.113	0.111	0.110	0.106	0.105	0.104	0.105	0.105	0.109	0.108	0.108
Observations	3388	3388	3388	2942	3458	3458	3458	2958	28804	28804	28804	24412
	Panel B: Performance Attribution CPI Adj. Assets < $50 million											
	Small				Very Small				Tiny			
Russell 3000	0.62***	0.50***	0.47***	0.48***	0.62***	0.51***	0.48***	0.48***	0.62***	0.45***	0.42***	0.42***
	[0.00]	[0.00]	[0.00]	[0.00]	[0.00]	[0.00]	[0.00]	[0.00]	[0.00]	[0.00]	[0.00]	[0.00]
BB Aggregate	0.38***	0.38***	0.30***	0.30***	0.38***	0.38***	0.31***	0.31***	0.38***	0.38***	0.29***	0.29***
	[0.00]	[0.00]	[0.00]	[0.00]	[0.00]	[0.00]	[0.00]	[0.00]	[0.00]	[0.00]	[0.00]	[0.00]
ACWI ex-US		0.12***	0.07***	0.07***		0.12***	0.08***	0.08***		0.17***	0.12***	0.13***
		[0.00]	[0.00]	[0.00]		[0.00]	[0.00]	[0.00]		[0.00]	[0.00]	[0.00]
HFRI Fund-Weighted			0.15***	0.15***			0.13***	0.13***			0.16***	0.16***
			[0.01]	[0.01]			[0.01]	[0.01]			[0.01]	[0.01]
CA Private Equity/Venture Capital				-				-				-
				-				-				-
Alpha (bp)	-0.07*	0.29***	0.11***	0.03	-0.70***	-0.29***	-0.48***	-0.49***	-2.12***	-1.45***	-1.45***	-1.43***
	[0.04]	[0.04]	[0.04]	[0.05]	[0.04]	[0.04]	[0.05]	[0.06]	[0.04]	[0.04]	[0.04]	[0.05]
RMSE	0.102	0.101	0.101	0.101	0.096	0.095	0.094	0.095	0.077	0.074	0.074	0.074
Observations	83606	83606	83606	70575	56678	56678	56678	46477	55561	55561	55561	46747

Table A.6: Risk-Adjusted Returns of Private Foundations by Sub-period

This table reports the risk-adjusted alpha estimates at the foundation level in the same size-bucket and overall across the 1991-1999, 2000-2008, and 2009-2016 sub-periods. The table reports the median and mean equal- and value-weighted alpha and bootstrapped p-values of private foundations' risk-adjusted returns using a four-factor model for each foundation with a minimum of seven years of valid returns data within a sub-period. Bootstrapped p-values are computed following the methodology of Kosowski et al. (2006). Size groups and value-weighted alpha are formed according to each private foundation's average inflation-adjusted fair value of total assets within each sub-period. Very large foundations have AUM greater than $500 million, large between $250 million and $500 million, medium between $50 million and $250 million, small between $10 million and $50 million, very small between $1 million and $10 million, and tiny less than $1 million. 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).

Time Period	Method	All	Very Large	Large	Medium	Small	Very Small	Tiny
1991-1999	Median	0.73	-0.93	0.00	0.79	0.90	0.91	-0.07
		0.00	0.02	0.60	0.00	0.00	0.00	0.60
	Mean (EW)	0.94	-0.98	0.43	0.85	1.16	1.56	-0.28
		0.00	0.06	0.31	0.00	0.00	0.00	0.35
	Mean (VW)	0.60	0.43	0.56	0.82	1.04	1.75	0.11
		0.62	0.73	0.20	0.01	0.00	0.00	0.21
2000-2008	Median	-0.13	1.34	1.61	0.30	0.14	-1.02	-0.96
		0.16	0.02	0.00	0.01	0.00	0.00	0.01
	Mean (EW)	0.81	1.11	3.28	0.72	0.98	0.16	1.09
		0.00	0.17	0.00	0.03	0.00	0.01	0.00
	Mean (VW)	1.71	2.00	3.68	0.64	1.13	0.48	1.33
		0.02	0.08	0.00	0.21	0.00	0.00	0.00
2009-2016	Median	-0.88	-0.36	-0.21	-0.66	-0.68	-1.01	-0.98
		0.00	0.00	0.42	0.00	0.00	0.00	0.00
	Mean (EW)	-0.87	-0.41	0.49	-0.81	-0.55	-0.98	-1.22
		0.00	0.01	0.49	0.00	0.00	0.00	0.00
	Mean (VW)	-0.37	-0.20	0.51	-0.89	-0.58	-0.80	-1.28
		0.06	0.18	0.41	0.00	0.00	0.00	0.00

Table A.7: Private Foundation Giving to Donor-Advised Funds (DAFs)

This table reports OLS regression coefficients and standard errors for the relationship between giving to DAFs and private foundation characteristics. 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 the dependent variable in columns (3) and (4) is the proportion of gift amounts that goes to a DAF. Independent variables include 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, 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 Internet Appendix provides detailed variable descriptions. Fiscal year and NTEE-10 fixed effects are included as an interaction in columns (1) and (3) and additively in columns (2) and (4). 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***	-0.03	-0.03
	[0.00]	[0.00]	[0.02]	[0.02]
Log(Age)	-0.00*	-0.00*	-0.04	-0.05*
	[0.00]	[0.00]	[0.03]	[0.02]
Investment Fees	-0.00	-0.00*	-0.07**	-0.06**
	[0.00]	[0.00]	[0.02]	[0.02]
Distributions (% Assets)	0.00**	0.00**	-0.00**	-0.00**
	[0.00]	[0.00]	[0.00]	[0.00]
Contributions (% FV)	0.00**	0.00**	-0.00	0.00
	[0.00]	[0.00]	[0.00]	[0.00]
Log(Paid)	0.08***	0.08***	-0.03	-0.03
	[0.01]	[0.01]	[0.02]	[0.02]
Log(Unpaid)	0.01*	0.00	-0.02	-0.02
	[0.00]	[0.00]	[0.02]	[0.02]
Net Return	-0.01	-0.01	0.40**	0.42**
	[0.01]	[0.01]	[0.14]	[0.14]
Trust	-0.00		0.01***	
	[0.00]		[0.00]	
Operating Foundation	-0.00***		-0.00	
	[0.00]		[0.00]	
Corporate Foundation	0.00		0.00	
	[0.00]		[0.00]	
Year × NTEE Fixed Effects	Yes	No	Yes	No
NTEE Fixed Effects	No	Yes	No	Yes
Year Fixed Effects	No	Yes	No	Yes
Adj-R^2	0.08	0.08	0.14	0.15
Observations	32394	32394	688	705

Table A.8:

Private Foundation Responsiveness to Changes in the Marginal Benefits of Giving

This table reports OLS regression coefficients and standard errors for the relationship between a foundation's spending ratio and variation in the marginal benefit of charitable support. The dependent variable is a private foundation's spending ratio at time *t*. Independent variables include the lagged amount of Federal Emergency Management Agency (FEMA) aid to a given state, whether a private foundation is a grantmaking foundation, 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 fiscal year level. ***, **, * correspond to statistical significance at the 1%, 5%, and 10% level, respectively.

	Spending Ratio_t			
	(1)	(2)	(3)	(4)
FEMA_{t-1}	0.03***	0.03**	-0.00	0.00
	[0.01]	[0.01]	[0.01]	[0.02]
Private Grantmaking Foundation × FEMA_{t-1}			0.05**	0.05**
			[0.02]	[0.02]
Controls	No	Yes	No	Yes
Fund Fixed Effects	Yes	Yes	No	No
State Fixed Effects	Yes	Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	Yes	Yes
Adj-R^2	0.61	0.62	0.61	0.62
Observations	167117	167117	167117	167117

Internet Appendix

Variable Definition

Characteristics of Private Foundations

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

Total Investment Assets. Total fair market value at fiscal year end of a foundation's investments in U.S. government bonds, equity, corporate bonds, physical asset investments (land, buildings, and equipment), mortgage loans,and other (includes alternative assets) from IRS Form 990-PF, Part II, Lines 10a, 10b, 10c, 11, 12, 13. We use the natural logarithm of total investment assets in the main analysis.

Contributions (% Income). Proportion of the total value of contributions, gifts, and grants received by a foundation scaled by a foundation's total income consisting of investment income and contributions received from IRS Form 990-PF, Part I, Lines 1a and 12a.

Distributions (% Expenses). Proportion of the total value of distributions paid by a foundation scaled by a foundation's total expenses consisting of investment- and non investment-related expenses and distributions paid from RS Form 990-PF, Part I, Lines 25a and 26a.

Age. Age of a foundation computed as the date of the current filing year less a foundation's first filing in the IRS SOI 990-PF data. We use the natural logarithm of age in the main analysis.

Paid. Total number of other employees paid over $50,000 from IRS Form 990-PF, Part VIII, Line 2. We use the natural logarithm of one plus the number of paid employees in the main analysis.

Unpaid. Number of uncompensated officers and directors from IRS Form 990-PF, Part VIII. We use the natural logarithm of one plus the number of paid employees in the main analysis.

Qualified Distribution Ratio. Ratio between the qualifying distributions (amounts actually paid to accomplish charitable purposes) and the distributable amount (minimum investment return, i.e., the mandated 5% of noncharitable-use assets) from IRS Form 990-PF, Part X Line VII, and Part XI Line 4.

NTEE-10 Classification Divides the universe of nonprofits into 10 broad categories based on the charitable causes they support.

Asset Allocation of Private Foundations

Cash. Percentage of the foundation's assets allocated to cash. 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 from IRS Form 990-PF, Part II, Line 1 and 2.

Government Bonds. Percentage of the foundation's assets allocated to government bonds. This includes US and state government obligations that mature in one year or more from RS Form 990-PF, Part II, Line 10a.

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

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

Alternatives. Percentage of the foundation's assets allocated to alternative investments. This includes private equity funds, venture capital funds, hedge funds, real estate funds, other limited partnerships, natural resources and infrastructure funds, derivatives, distressed funds from from IRS Form 990-PF, Part II, Line 13. This does not include program-related investments (PRI).

Investment Style. Segments private foundations into eight time-varying groups based on their asset allocation to fixed income, equity, and alternatives.

Investment Performance and Fees of Private Foundations

Total Net Return. Net return includes investment earnings, gains, and losses, including both realized and unrealized amounts for the fiscal year less a foundation's investment fees. Representative equation form shown in Equation 1 in the main text.

Dividend Yield. Total interest on savings and temporary cash investments, dividends and interests from securities, and other income from IRS Form 990-PF, Part I, Lines 3a, 4a, and 11a.

Realized Gains. Total net gain (or loss) from sale of assets from IRS Form 990-PF, Part I, Line 6a.

Risk. Standard deviation of returns compiled using a four-year rolling window of a foundation's total net returns.

Investment Fees. Total operating and administrative investment expenses deducted from gross investment income. Source: IRS Form 990-PF, Part I, Line 26b.

Figure IA.1: Asset Allocation by Foundation Age

This figure shows the average asset allocation by private foundations from 1991 to 2016 as reported to the IRS, Form 990-PF. Age quartiles are defined within a given calendar-month, calendar year.

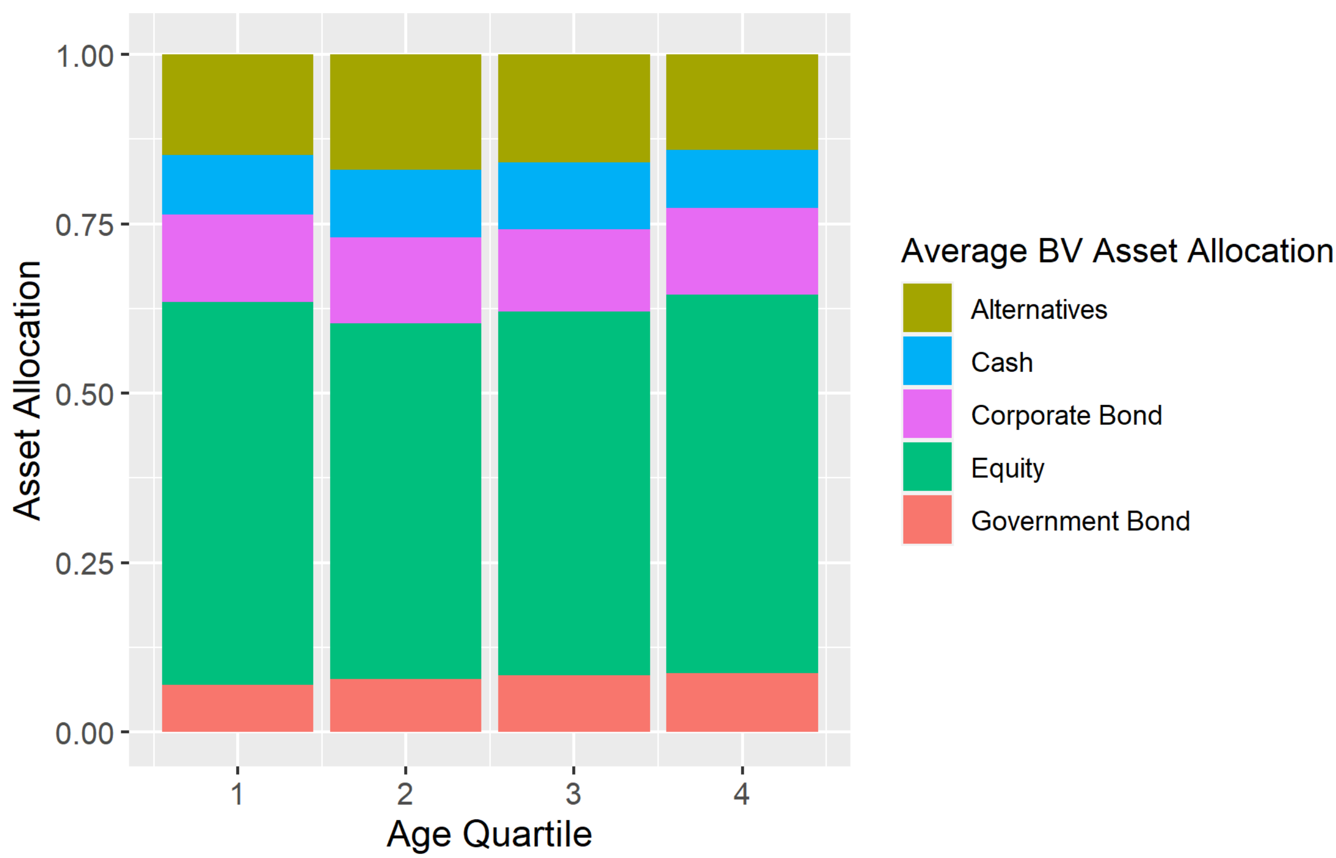

Figure IA.2: Net Returns and Spending Ratio by Foundation Age

This figure shows the average net return and spending rate by private foundations from 1991 to 2016 as reported to the IRS, Form 990-PF. Age quartiles are defined within a given calendar-month, calendar year.

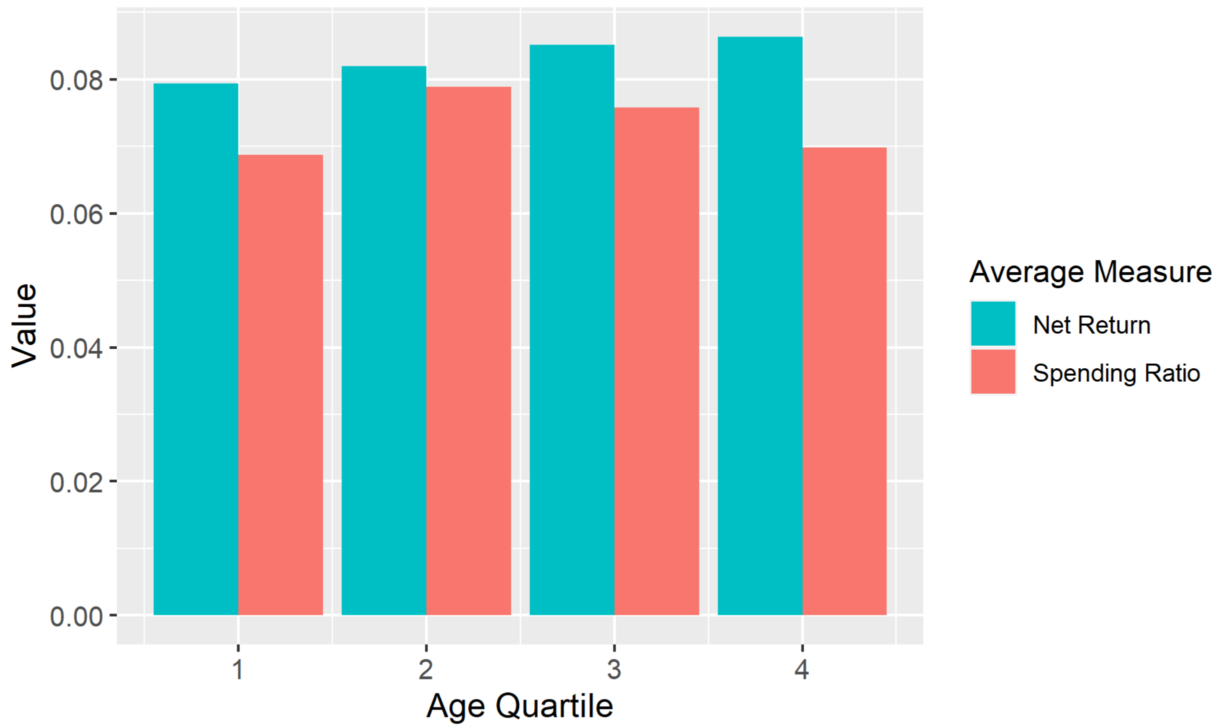

Figure IA.3: Asset Allocation by Foundation Type

This figure shows the average asset allocation by private foundations from 1991 to 2016 as reported to the IRS, Form 990-PF.

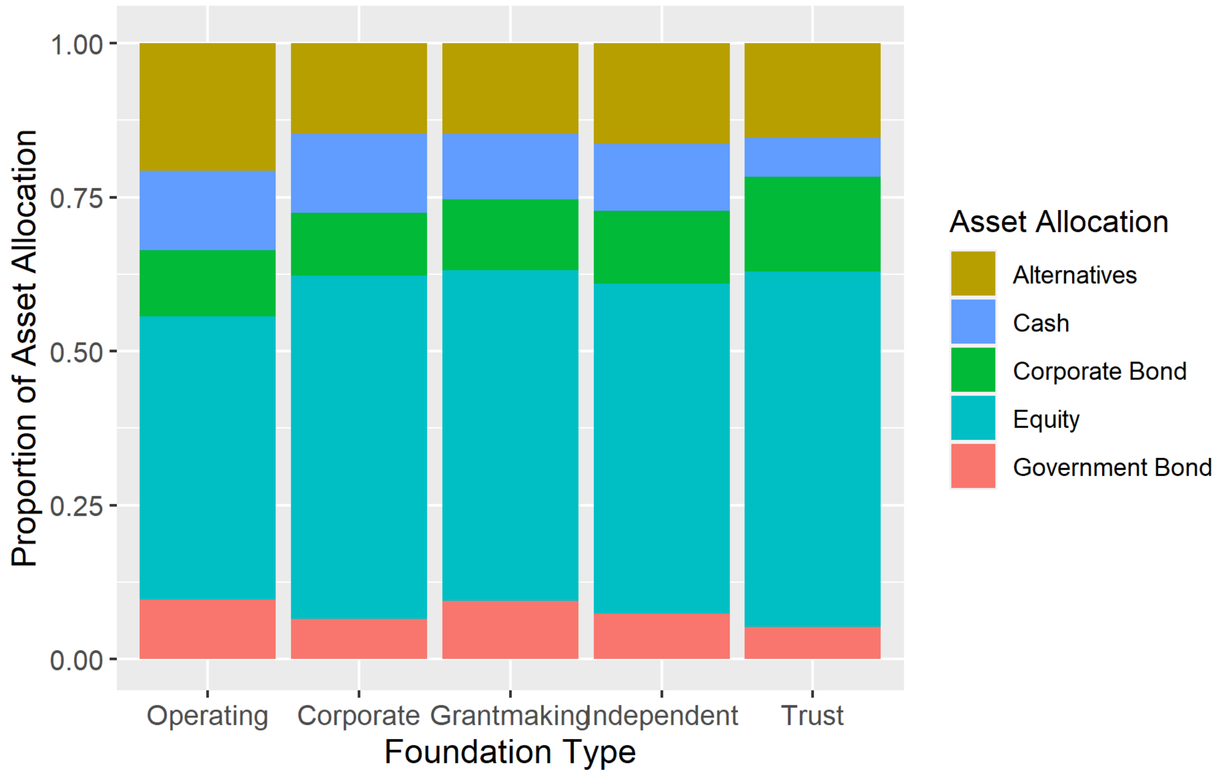

Figure IA.4: Investment Returns and Spending Ratio by Foundation Type
This figure shows the average net return and spending rate by private foundations from 1991 to 2016 as reported to the IRS, Form 990-PF by a foundation's type.

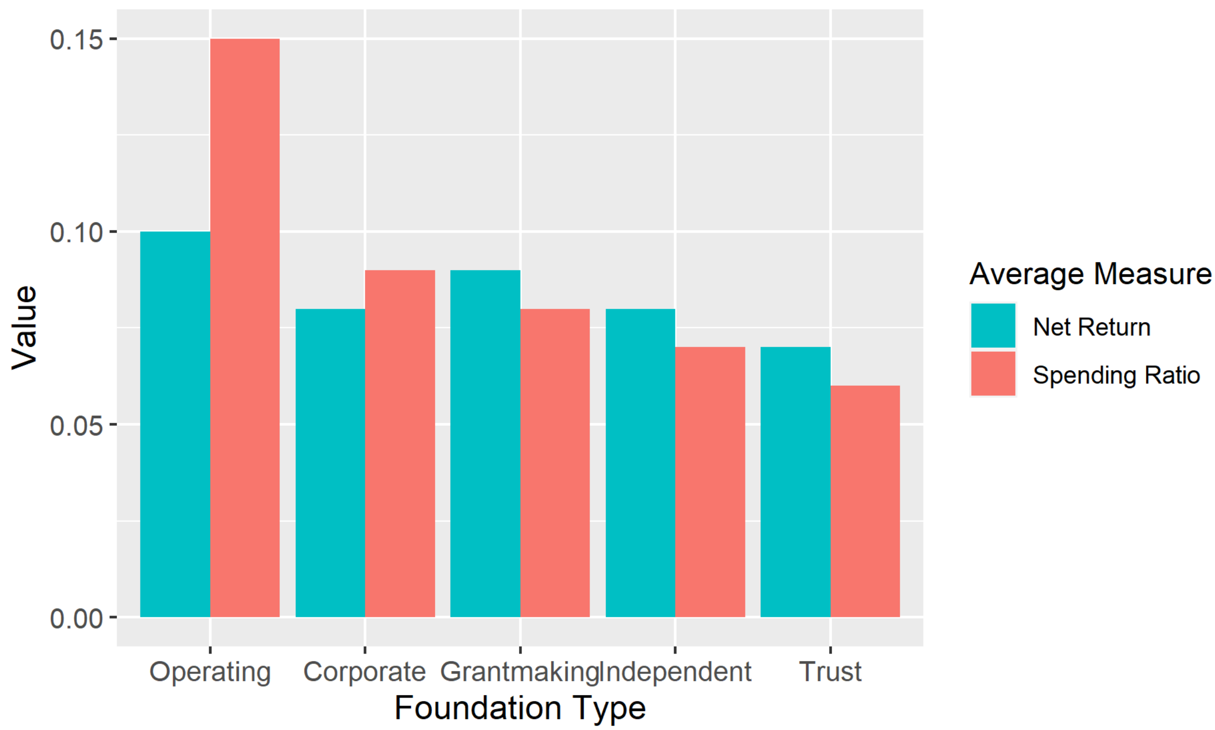

Table IA.1: Sample and Flows

This table reports the total number of private foundations (Total), the number of foundations entering the sample (Entry), the number of foundations exiting the sample (Exit), the total assets in billion of dollars of the reporting foundations (AUM), and the total distributions in billions of dollars of the reporting foundations (Distr.) from 1991 to 2012 using data from the IRS, 990 core files stored on the National Center of Charitable Statistics hosted on Urban Institute's website. The total number of foundations in the current year equals the total number of foundations in the previous year plus the number that entered the sample in the current year minus the number that exited the sample in the current year. *BV AUM* denotes the total book value of assets for all reporting foundations while *Distr.* represents the distributions made by all reporting private foundations to charitable causes.

Year	Total	Entry	Exit	BV AUM ($B)	Distr. ($B)
1991	40280	-	-	143.4	10.1
1992	33290	4297	11287	106.6	15.7
1993	13612	9678	29356	65.2	5.1
1994	44488	35306	4430	165.5	11.9
1995	45976	6322	4834	197.0	13.3
1996	48674	7591	4893	247.0	15.4
1997	53810	10241	5105	278.0	18.1
1998	58211	11063	6662	311.9	19.7
1999	57204	7660	8667	365.8	26.2
2000	63833	12888	6259	382.8	28.2
2001	63687	9515	9661	330.5	22.9
2002	70644	13027	6070	359.6	27.4
2003	73365	9065	6344	427.5	28.8
2004	75360	8503	6508	463.0	30.8
2005	80940	9920	4340	512.8	40.4
2006	77052	5588	9476	571.4	36.4
2007	82406	12248	6894	637.8	45.7
2008	85579	12111	8938	556.1	47.1
2009	91434	12823	6968	604.7	44.5
2010	91343	7614	7705	639.6	46.9
2011	87820	6450	9973	607.5	49.1
2012	76585	5926	17161	552.5	43.5

Table IA.2: Risk-adjusted Returns of Private Foundations: Alternative Returns

This table reports the risk-adjusted alpha estimates at the foundation level in the same size-bucket and overall using alternative measures of return performance. The table reports the median and mean equal- and value-weighted alpha and bootstrapped p-values of private foundations' risk-adjusted returns using a four-factor model for each foundation with a minimum of seven years of valid returns data. Panel A includes cash and savings in the denominator of the net return measure while Panel B excludes inflows and outflows from the net return measure. Bootstrapped p-values are computed following the methodology of Kosowski et al. (2006). Size groups and value-weighted alpha are formed according to each private foundation's average inflation-adjusted fair value of total assets. Very large foundations have AUM greater than $500 million, large between $250 million and $500 million, medium between $50 million and $250 million, small between $10 million and $50 million, very small between $1 million and $10 million, and tiny less than $1 million. 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).

Method	All	Very Large	Large	Medium	Small	Very Small	Tiny
			Panel A: Add Cash and Savings				
Median	-0.82	0.62	0.40	-0.10	-0.34	-0.89	-1.55
	0.00	0.00	0.01	0.05	0.00	0.00	0.00
Mean (EW)	-0.45	1.50	1.09	0.32	0.08	-0.47	-1.48
	0.00	0.00	0.00	0.00	0.06	0.00	0.00
Mean (VW)	0.84	1.39	1.04	0.39	0.13	-0.29	-1.34
	0.00	0.00	0.00	0.00	0.01	0.00	0.00
			Panel B: No Cash Flow Adjustment				
Median	-0.96	0.28	0.22	-0.28	-0.58	-0.99	-1.63
	0.00	0.09	0.12	0.00	0.00	0.00	0.00
Mean (EW)	-0.73	0.86	0.86	0.01	-0.40	-0.69	-1.55
	0.00	0.00	0.00	0.49	0.00	0.00	0.00
Mean (VW)	0.48	1.05	0.72	0.08	-0.38	-0.53	-1.48
	0.01	0.01	0.01	0.26	0.00	0.00	0.00

Table IA.3: Risk-adjusted Returns of Private Foundations: Alternative Filters

This table reports the risk-adjusted alpha estimates at the foundation level in the same size-bucket and overall using alternative filtering procedures. The table reports the median and mean equal- and value-weighted alpha and bootstrapped p-values of private foundations' risk-adjusted returns using a four-factor model for each foundation with a minimum of seven years of valid returns data. Panel A drops operating foundations, Panel B removes foundation observations that have contribution/assets > 0.2, and Panel C excludes observations that have investment assets/total assets < 0.8. Bootstrapped p-values are computed following the methodology of Kosowski et al. (2006). Size groups and value-weighted alpha are formed according to each private foundation's average inflation-adjusted fair value of total assets. Very large foundations have AUM greater than \$500 million, large between \$250 million and \$500 million, medium between \$50 million and \$250 million, small between \$10 million and \$50 million, very small between \$1 million and \$10 million, and tiny less than \$1 million. 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).

Method	All	Very Large	Large	Medium	Small	Very Small	Tiny
			Panel A: Drop Operating Foundations				
Median	-0.84	0.78	0.57	-0.07	-0.35	-0.92	-1.60
	0.00	0.00	0.00	0.22	0.00	0.00	0.00
Mean (EW)	-0.51	1.10	1.42	0.31	0.06	-0.57	-1.53
	0.00	0.00	0.00	0.00	0.16	0.00	0.00
Mean (VW)	0.97	1.65	1.45	0.35	0.10	-0.42	-1.42
	0.00	0.00	0.00	0.00	0.07	0.00	0.00
			Panel B: Drop if Contributions/Assets > 0.2				
Median	-0.83	0.78	0.51	-0.01	-0.30	-0.93	-1.61
	0.00	0.00	0.00	0.44	0.00	0.00	0.00
Mean (EW)	-0.41	1.25	0.83	0.65	0.22	-0.46	-1.57
	0.00	0.00	0.01	0.00	0.00	0.00	0.00
Mean (VW)	1.05	1.62	1.00	0.64	0.29	-0.30	-1.48
	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Panel C: Drop if Cash > 0.2 and Inv. Assets < 0.8				
Median	-0.92	1.09	0.52	-0.05	-0.44	-1.04	-1.67
	0.00	0.02	0.01	0.34	0.00	0.00	0.00
Mean (EW)	-0.72	1.56	0.88	0.35	-0.20	-0.90	-1.66
	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mean (VW)	1.03	1.88	0.93	0.36	-0.15	-0.72	-1.53
	0.00	0.00	0.00	0.00	0.01	0.00	0.00

Table IA.4: Risk-adjusted Returns of Private Foundations: Alternative Methods

This table reports the risk-adjusted alpha estimates at the foundation level in the same size-bucket and overall using alternative methods. The table reports the median and mean equal- and value-weighted alpha and bootstrapped *p*-values of private foundations' risk-adjusted returns using a four-factor model for each foundation with a minimum of seven years of valid returns data. Panel A requires foundations to report in every period, Panel B groups foundations into size buckets based on their first reported AUM, and Panel C includes only observations with December fiscal year ends. Bootstrapped *p*-values are computed following the methodology of Kosowski et al. (2006). Size groups and value-weighted alpha are formed according to the average AUM in Panel A, first AUM in Panel B, and average AUM in Panel C. Very large foundations have AUM greater than \$500 million, large between \$250 million and \$500 million, medium between \$50 million and \$250 million, small between \$10 million and \$50 million, very small between \$1 million and \$10 million, and tiny less than \$1 million. 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).

Method	All	Very Large	Large	Medium	Small	Very Small	Tiny
Panel A: Require 26 Reporting Years							
Median	-0.41	0.43	0.34	-0.27	-0.41	-0.85	-1.03
	0.00	0.10	0.08	0.00	0.00	0.00	0.00
Mean (EW)	-0.12	0.65	0.70	0.08	-0.21	-0.55	-0.40
	0.00	0.04	0.00	0.23	0.00	0.00	0.00
Mean (VW)	0.94	1.41	0.88	0.05	-0.19	-0.53	-0.71
	0.00	0.03	0.00	0.36	0.02	0.00	0.00
Panel B: Assign into Size Buckets by First AUM							
Median	-0.81	0.35	0.33	-0.12	-0.27	-0.92	-1.49
	0.00	0.08	0.05	0.03	0.00	0.00	0.00
Mean (EW)	-0.39	0.07	0.68	0.40	0.23	-0.42	-1.37
	0.00	0.43	0.01	0.00	0.00	0.00	0.00
Mean (VW)	0.59	1.04	0.82	0.30	0.17	-0.28	-1.34
	0.01	0.03	0.01	0.10	0.00	0.00	0.00
Panel C: Require December Fiscal Year-End							
Median	-0.71	1.12	0.23	0.03	-0.35	-0.75	-1.26
	0.00	0.00	0.14	0.27	0.00	0.00	0.00
Mean (EW)	-0.34	1.63	1.10	0.47	0.11	-0.25	-1.36
	0.00	0.00	0.00	0.00	0.06	0.00	0.00
Mean (VW)	1.11	1.84	1.11	0.51	0.18	-0.10	-1.21
	0.00	0.00	0.00	0.00	0.02	0.16	0.00

Table IA.5: 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. Size groups are formed based on the current fiscal year value of inflation-adjusted assets. Very large foundations have AUM greater than \$500 million, large between \$250 million and \$500 million, medium between \$50 million and \$250 million, small between \$10 million and \$50 million, very small between \$1 million and \$10 million, and tiny less than \$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 Newey-West standard errors following Newey and West (1994)).

Method	All	Very Large	Large	Medium	Small	Very Small	Tiny
	Equal- and Value-Weighted Portfolio Approach						
α^{EW} (%)	-0.00	1.76***	1.19**	1.05***	0.15	-0.64*	-2.04***
	[0.35]	[0.58]	[0.52]	[0.39]	[0.35]	[0.35]	[0.22]
α^{VW} (%)	0.69	1.42**	0.34	0.23	-0.48	-1.18***	-2.30***
	[0.46]	[0.67]	[0.57]	[0.39]	[0.38]	[0.34]	[0.23]
Observations	313	267	257	312	313	312	312

Table IA.6: Risk-adjusted t-Statistics of Private Foundations

This table reports risk-adjusted alpha t-statistic estimates within a portfolio of foundations in the same size-bucket and overall. The table reports coefficients and bootstrapped p-values of private foundations' t-statistics at various percentile ranges estimated using a four-factor model for each foundation with a minimum of seven years of valid returns data. Bootstrapped p-values are computed following the methodology of Kosowski et al. (2006). Size groups are formed according to each private foundation's average inflation-adjusted fair value of investment assets. Very large foundations have AUM greater than \$500 million, large between \$250 million and \$500 million, medium between \$50 million and \$250 million, small between \$10 million and \$50 million, very small between \$1 million and \$10 million, and tiny less than \$1 million. Parameter estimates are obtained by regressing annual excess returns on annual risk factors and scaling this estimated alpha coefficient by the estimated standard error. 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).

	All	Very Large	Large	Medium	Small	Very Small	Tiny
	Kosowski et al. (2006) Bootstrap Method						
Percentile							
1	-6.3	-1.9	-2.7	-3.2	-4.1	-5.9	-8.0
	0.00	0.99	0.67	0.21	0.00	0.00	0.00
5	-3.6	-1.1	-1.7	-1.9	-2.2	-3.2	-5.3
	0.00	1.00	0.83	0.28	0.00	0.00	0.00
10	-2.5	-0.9	-1.2	-1.5	-1.6	-2.3	-4.0
	0.00	1.00	0.94	0.11	0.00	0.00	0.00
25	-1.3	-0.3	-0.5	-0.8	-0.9	-1.3	-2.2
	0.00	1.00	0.95	0.00	0.00	0.00	0.00
Median	-0.4	0.3	0.2	0.0	-0.1	-0.4	-0.8
	0.00	0.00	0.01	0.61	0.00	0.00	0.00
75	0.4	1.0	0.9	0.8	0.7	0.3	-0.1
	0.00	0.00	0.06	0.03	1.00	1.00	0.00
90	1.2	1.7	1.5	1.6	1.5	1.1	0.5
	0.00	0.01	0.23	0.00	0.08	1.00	1.00
95	1.8	2.6	2.2	2.1	2.1	1.7	1.0
	0.00	0.00	0.05	0.00	0.00	1.00	1.00
99	3.4	4.4	3.4	3.8	4.1	3.2	2.6
	0.00	0.01	0.21	0.00	0.00	0.99	1.00
Mean^{EW}	-0.5	0.5	0.2	0.0	-0.1	-0.5	-1.3
	0.01	0.00	0.01	0.04	0.00	0.00	0.00
Mean^{VW}	0.3	0.6	0.3	0.1	-0.1	-0.4	-1.3
	0.01	0.00	0.00	0.01	0.01	0.00	0.01

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

This table reports risk-adjusted alpha estimates for foundations within the same size-bucket and across all foundations. The table reports coefficients and bootstrapped p-values of private foundations' risk-adjusted returns at various percentile ranges estimated using the Carhart (1997) four-factor model for each foundation with a minimum of seven years of valid returns data. Bootstrapped p-values are computed following the methodology of Kosowski et al. (2006). Size groups are formed according to each private foundation's average inflation-adjusted fair value of total assets. Very large foundations have AUM greater than $500 million, large between $250 million and $500 million, medium between $50 million and $250 million, small between $10 million and $50 million, very small between $1 million and $10 million, and tiny less than $1 million.

	All	Very Large	Large	Medium	Small	Very Small	Tiny
	Carhart (1997) Four Factor Model: Kosowski et al. (2006)						
Percentile							
1	-13.4	-7.9	-9.4	-15.5	-15.5	-13.6	-11.1
	0.00	0.72	0.43	0.00	0.00	0.00	0.00
5	-6.0	-3.6	-3.4	-5.6	-6.0	-6.1	-6.2
	0.00	0.99	0.95	0.12	0.00	0.00	0.00
10	-3.6	-2.4	-2.2	-3.2	-3.4	-3.5	-4.1
	0.00	0.99	0.99	0.92	0.00	0.00	0.00
25	-1.4	-1.0	-0.8	-1.1	-1.2	-1.5	-1.7
	0.00	0.98	0.99	1.00	0.92	0.00	0.00
Median	0.2	0.7	0.7	0.5	0.5	0.1	-0.1
75	2.0	3.1	2.8	2.7	2.6	1.8	1.3
	0.00	0.00	0.00	0.00	0.00	0.00	0.00
90	5.0	7.1	5.0	6.7	6.0	4.7	2.9
	0.00	0.00	0.00	0.00	0.00	0.00	0.00
95	8.0	11.3	6.7	9.9	9.2	8.3	4.9
	0.00	0.00	0.01	0.00	0.00	0.00	0.00
99	17.8	14.7	10.5	18.7	19.8	18.7	11.4
	0.00	0.05	0.40	0.00	0.00	0.00	0.00
Mean^{EW}	-0.4	1.5	1.1	1.2	0.9	0.4	-0.3
	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mean^{VW}	1.0	1.6	1.0	1.1	0.8	0.5	-0.3
	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Table IA.8:

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 1991 to 2016. 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)	22.0	11.3	5.3	11.4	19.3
(2)	10.8	14.9	8.8	9.8	8.5
(5)	5.0	8.8	14.6	6.7	4.0
(9)	10.1	9.2	7.2	16.1	12.7
(10)	17.9	8.2	4.6	13.8	26.6

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	0.10	0.00
(5)	0.00	0.00	0.00	0.00	0.00
(9)	0.39	0.00	0.00	0.00	0.00
(10)	0.00	0.00	0.00	0.00	0.00