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A Novel Approach to Legacy Donations with Long-Term Benefits Supported by Numerical Illustrations

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RESEARCH ARTICLE

A novel approach to legacy donations with long-term benefits supported by numerical illustrations

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Abstract

Philanthropic donors face challenges in matching the causes to which they donate, the time horizon—and thus impact—of their donations, and the charitable vehicles they choose for making contributions. Wealthier donors may elect to create their own foundations and customize their charitable support. Less wealthy donors have limited choices: they may contribute to a nonprofit's current operations or to existing nonprofit endowments. We present a novel approach for making charitable donations, blending aspects of each of these strategies. Our approach has potential long-term financial benefits, allows donors to control their charitable donations in a convenient and easy-to-implement manner, can be established through an existing nonprofit organization, expands opportunities for more donors because it requires a smaller corpus contribution with lower management costs than creating a foundation, provides tax savings in the United States and other countries (e.g., the UK, Canada, and Australia) comparable to other planned giving vehicles, and may be implemented during one's lifetime using donor advised funds or as part of a legacy plan through the donor's estate documents, which is when the long-term benefits accrue.

KEYWORDS
charitable donation, estate planning, legacy donation

Practitioner Points

- The current methods for making legacy donations to Nonprofit Organizations (NPOs) are (1) to leave funds directly to the NPO, (2) to leave funds in an endowment fund either at the NPO or some other charitable organization that then provides annual distributions to the NPO or (3) establish a private foundation.
- In this (and a related) paper, a novel approach to making legacy donations with potential long-term financial benefits to the NPO is proposed and analyzed with numerical computations.
- The proposed approach has these advantages to donors:
1. Donors can achieve these benefits with a smaller corpus contribution and with lower management costs than establishing a private foundation.
2. Donors can control their legacy donations in a more convenient and easy-to-implement manner.

3. Donors can implement this approach either as a legacy donation through estate documents or else during their lifetime—with appropriate tax benefits—using Donor Advised Funds and leave written instructions to convert these accounts to permanent funds upon the donor's death.

1 | INTRODUCTION

Those who make philanthropic donations face a challenge of matching personal preferences, desired impact, the time horizon over which they want to support chosen nonprofits (NPOs), and the charitable instruments available for making their contributions. As noted in Phillips et al. (2021) (among others), donors make charitable gifts as direct donations or bequests or give to "intermediary vehicles (foundations, endowments, trusts, DAFs [donor-advised funds] and limited liability companies where they exist)" (p. 411). Hager (2006) identifies the two strongest motivations for donors to contribute to endowments as the desire to be recognized in perpetuity and for community reputation (garnering respect). To have longer-lasting impact, donors can contribute through intermediary vehicles, choosing, for example, to donate to endowments or funds at universities, community foundations, religious charities, or foundations established by financial institutions such as Fidelity. Doing so allows nonprofit professional staff to manage and use the funds. If contributions are provided during the donor's lifetime as Donor Advised Funds (DAF's), these vehicles enable "donors to be involved in giving decisions during and after their lifetimes," (Scaife et al., 2012; Stanford PACS, 2020, in Phillips et al. (2021, p. 411)) thus allowing them to retain advisory privileges on the use of the funds while they are alive. They can also be part of a legacy portfolio, which may include multiple vehicles.

In a 1990 review of university endowments, Hansmann (1990) identifies several groups of stakeholders, including university administrators, trustees, endowment managers, tenured and nontenured faculty, fund managers, and current and future students, as well as donors, each of whom have different motivations and viewpoints concerning endowment investment and payout policies. Many of these same stakeholder groups and viewpoints exist in other types of NPOs. To impose their influence on this process, wealthier donors may elect to establish individual private foundations, preserving capital and distributing periodically to NPOs according to their determination. These donors can customize their charitable support and have more control over investment and fund distributions; however, this comes with higher administrative costs and professional staff to manage the fund and generate investment returns, limiting this vehicle to those with significant wealth and the desire to remain actively involved in fund management. (See, e.g., Clarfeld, 2019.) Arden (2013) notes that wealth is crucial in a donor's decision to establish a private foundation along with the right personality and the passion to make the foundation succeed.

Donors capable of making a more modest contribution may find the costs or time-and-energy commitments of establishing their own charitable foundation prohibitive (Clarfeld, p. 2). Thus, they face the more limited choices noted above of giving to an NPO or endowment, with the latter possibly offering (depending on the NPO's terms) community reputation (if set up during the donor's lifetime), and a legacy bearing their names and assuring future charitable gifts.

Through the development of an innovative donation strategy that provides cash distributions to the NPOs over time, the work here provides donors with an alternative that garners some of the advantages of establishing private foundations and existing endowments or other intermediary vehicles while incurring significantly less administrative costs. In contrast to funds contributed to, and managed by, individual NPOs, a vital feature of our strategy is that the choice of investment and payout policies vests entirely with the donor during the donor's life and with the donor's designated fund management organization after the donor's death, thus allowing the donor both flexibility and control over the *future* handling of the funds. (Note that legally, in the US, the NPO controls funds; Clarfeld, 2019, p. 2.) The donor is the arbitrator of the differing views of various stakeholders in the NPO, allowing the donor to fulfill both of the motivations of perpetuity and community reputation described by Hager (2006).

The proposed strategy expands the available options for many donors because this strategy requires a smaller corpus contribution with lower management costs than establishing a foundation. The proposed strategy allows donors with more modest means to make donations that increase long-term financial benefits to NPOs while staying within existing US regulations (and often within the regulations of other countries, e.g., Australia, Canada, New Zealand, and the UK. See, e.g., Phillips et al. [2021]). The strategy also provides the same tax savings afforded to other giving vehicles and uses existing vehicles for planned giving, resulting in the expansion of the pool of potential contributors.

The proposed strategy is described in Section 1 along with a discussion of the potential long-term financial benefits and other advantages and implementation issues. Section 2 provides a review of relevant literature. In Section 3, numerical illustrations are presented to show the long-term benefits of the strategy. This is followed in Section 4 by strategy-selection guidelines. The last section contains a summary of our work.

1. The master fund strategy and its potential long-term benefits:

   To understand this novel approach, we first define the **Traditional Fund Strategy (TFS)** as one in which the donor creates an endowment fund, hereafter referred to as the "Charity Fund" (CF). An NPO or an established organization (e.g., the Columbus [OH] Foundation) holds and invests these funds, distributing an
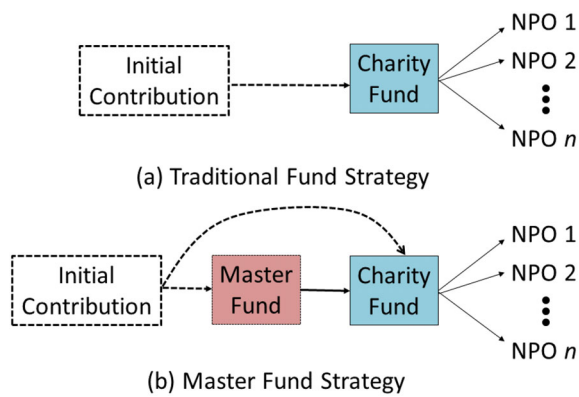
FIGURE 1 Traditional versus MFS.

annual percent of the fund value to the donor's specified organizations (see Figure 1a).

The main idea of the new strategy is to provide a mechanism that yields a lower *initial* payout rate to the NPO than that of the TFS so that retained funds can be used to provide significantly greater returns in future years. While there are various ways to accomplish this—for example, specifying lower specific dollar amounts or percentages of assets to be distributed from the CF each year—we have found no approach in the literature that is easier to implement and retains more control for the donor—both during their lifetime and after—than the one proposed here.

With the **Master Fund Strategy (MFS)**, the initial donation is divided between the CF and another endowment fund, the **"Master Fund" (MF)**, housed at, say, the same sponsoring organization as the CF. Where the CF sends annual distributions to the donor's specified charities, *the MF sends annual distributions to the CF* (see Figure 1b), thus increasing the corpus of the CF.

To illustrate, suppose an initial donation of $100,000 is made. Under the TFS, all this money is put in the CF while under the MFS, say $50,000 is put in the CF and $50,000 is put in the MF (other initial allocations are possible). Suppose further that both the CF and the MF earn 8% simple interest in the first year and that both funds distribute 5% at the end of the year. Table 1 summarizes the fund values during the first year under both strategies.

One observation from Table 1 is that, under the TFS, the NPO receives $5000 while under the MFS, that NPO receives only $2500. As a result, at first glance, it appears that the NPO is better off under the TFS than under the MFS. However, it is also important to look at the total amount of money in the funds available for the next year under the two strategies. From the last row in Table 1, you can see that with the TFS that value is $103,000 while under the MFS that value is $105,500. Therein lies the potential benefit of the MFS. Due to the fact that the total value of the endowment funds under the MFS is greater than that under the TFS, if one repeats the computations in Table 1 year after year, eventually, the money received by the NPO under the MFS exceeds the amount received under the TFS (see Section 2 for numerical illustrations).

TABLE 1 Funds values after 1 year for both the TFS and the MFS.

	TFS	MFS		Total
	CF	CF	MF	Total
Initial value	100,000	50,000	50,000	100,000
− Annual distribution	5000[a]	2500[a]	2500[b]	5000
+ $ Received from Inv.	8000	4000	4000	8000
+ $ Received from MF	0	2500	0	2500
Ending value	103,000	54,000	51,500	105,500

[a]This money is given to the donor's charity.
[b]This money is given to the CF (and NOT to the donor's charity).

An NPO can, of course, invest their funds according to the proposed MFS; however, as just pointed out, in so doing they would be receiving less income in the earlier years and more income in future years. As a result, it is possible that the NPO would prefer having increased funds in the earlier years and hence choose not to use the MFS. Rather than allow the NPO to make this decision, the availability of the MFS allows the donor to make that decision.

For a donor to compare any two legacy donation strategies—such as the TFS and the MFS—requires comparing different cash flows to the NPO over time. For example, one strategy might provide greater distributions to the NPO in earlier years (the TFS) while another provides greater distributions in later years (the MFS). We use **net-present-value (NPV)** to assess superiority (in discounted values of future cash flows) of one strategy over another, and the details of doing so for the MFS are provided in Section 3. One additional advantage of the MFS is that it allows for a rigorous mathematical analysis to determine conditions under which the NPV of the cash flows received by the NPOs under the MFS exceed those under the TFS. Such an analysis is provided in a separate companion paper.

1.1 | Ease of implementation

Assuming that an NPO has an endowment fund—which is not always the case—one could, in theory, have an NPO implement the foregoing MFS by making a single donation to the NPO with appropriate instructions that only a certain portion of the annual distributions are to be used for general operating expenses and the remainder retained for growth. However, this requires the NPO to have the ability and willingness to make special accounting arrangements. Furthermore, such instructions would have to be given to each NPO the donor wishes to support. With the proposed MFS, the donor only needs to set up the two funds at a host organization with instructions that the annual distributions from the CF go to the donor's selected NPOs and the annual distributions from the MF go to the CF.

One can also achieve similar results to that of the MFS by creating only the CF but limiting its annual payouts, for example by specifying how much, or what percentage, of the fund value should be given to the NPOs each year. However, as it is not possible to provide an

infinite list of the annual payouts, the only practical way to provide distribution limits "in perpetuity" with only one fund is to specify a *fixed* dollar amount (or percentage) to be distributed each year, which does not allow for making adjustments during varying economic conditions in the future. An advantage of the MFS is that, once the two funds are set up, after the donor's death, the organization housing the two funds is given instructions to apply whatever their *existing* annual distribution rate for endowed funds is to both the MF and the CF—no further instructions are necessary.

Furthermore, the MFS can be implemented either during the donor's lifetime, using DAFs, with appropriate written instructions to convert accounts to permanent funds upon the donor's death, or with legacy donations through estate documents. In the former case, donors in the US can receive tax benefits in the year they make the gifts—such as avoiding capital gains taxes—and the NPO typically uses the donation immediately to provide services to its clients. Phillips et al. (2021), examining DAF usage in Australia, Canada, and the United States, show that US policies support "tax savings related to wealth liquidity events." (p. 433) and provide "tax saving vehicles" as part of DAF giving (p. 434). Canada, with participation rates and per capita giving similar to the US provides somewhat less tax-friendly rules and encourages "philanthropy widely across the population" allowing deductions for tax purposes only on public shares (Phillips et al., 2021, p. 434). UK tax rules are more restrictive than US rules but allow donors to make gifts of shares, property, and cash; however, most commonly UK donors choose cash as these donations receive charitable tax relief known as Gift Aid. These gifts receive a 25% bonus through HMRC (His Majesty's Revenue and Customs) and may also receive further tax relief based on a taxpayer's tax rate. Australia "puts the emphasis on demonstrating public benefit," has more restrictions on charitable giving and does not allow capital gains exemptions for the "donation of securities and other property" (Phillips et al., 2021, p. 434). Australia thus makes DAFs much less attractive as tax saving vehicles, than Canada, the United States, and the UK.

Those creating the MFS through estate documents have additional tax benefits in the US, while those in other countries have varying benefits. For example, the UK provides inheritance tax relief to those who donate 10% or more of their estate to charity. In summary, establishing the MF in the US and at least a few other countries garners tax benefits whether created during the donor's lifetime or after the donor's death.

In review, the MFS provides donors of more modest means an alternative mechanism to control their legacy donations that has long-term financial benefits, requires less corpus than establishing a private foundation, and is easy to implement—either during the donor's lifetime, providing the same US tax savings afforded other giving vehicles, or as a legacy donation—thus providing the opportunity to expand the pool of potential contributors.

2 | LITERATURE

To understand the motivation for, and effects of, our proposed strategy requires examining why donors participate in planned giving, who they are (what characteristics they have), and how they set up their legacies, including understanding available vehicles and the time horizon preferred to support chosen NPOs. It also requires examining nonprofit perspectives on giving.

2.1 | Donors' motivations for giving

The motivation for donors' charitable giving varies widely.[1] Donors may: care about an issue and want to help; give for religious reasons or family tradition; get a "warm glow" from benefitting others (Andreoni, 1998); enhance their reputations; get tax benefits; or want to create a legacy. (See 15 Reasons Why People Give to Charity, and What to Do About It [proactivecontent.net, 2018]; and, e.g., Sargeant, 1999; Einolf, 2016, who provide other factors correlated with giving, and Schervish, 2000, in Routley & Sargeant, 2014, who provides patterns, motivations, and strategies for giving for wealthy donors.) Bekkers and Wiepking (2010) found that people donate based on awareness of need, solicitation, costs and benefits, altruism, reputation, and psychological benefits (e.g., joy of giving; self-image, values, and efficacy [perception that contributions positively impact the cause]). Konrath and Handy (2017) provided insight on why individuals donate in different settings and for different reasons or causes, dividing benefits into two categories: public benefits (altruism, trust in charitable organization/increasing donation impacts, and social); and private benefits (social, egoism, fiscal, guilt, and self-esteem, all resulting from views on what is "acceptable" or "desired" behavior, or to achieve financial benefit). Important for this study, they note that individuals consider financial constraints (Furnham, 1984, in Konrath & Handy, 2017) and may view donors' incomes as budget constraints. (Duncan, 1999, in Konrath & Handy, 2017). Our proposed strategy extends donors' budgets by maximizing the effect of donations on NPOs.

We now turn to motivations for legacy giving. We assume those with legacy plans wish to create something in their remembrance, assuring funds for their chosen NPO(s) into the future. As mentioned in our introduction, Hager (2006) noted two main motivations for legacy giving: perpetuity (obtaining gratification from long-lasting impact) and community reputation (garnering respect). Others also view these motivations through the lens of extending oneself, for example, Routley and Sargeant (2014, p. 881) found that "the contents of [donor's] estate can function as an extension of the self [...] providing [...] a form of symbolic immortality."[2] Jonas et al. (2002) noted people are more generous after thinking about their own mortality. Another motivation is intergenerational equity, suggesting that donors may value assets benefiting future and current generations equally. (See Hansmann, 1990.)

Studies also address who plans legacy gifts. James (2008) found that less than 10% of US donors over age 50 who donated more than $500 per year had charitable estate plans. James also revealed that having a family strongly predicts that a donor will leave assets to the next generation, older, wealthier, more educated, more religious donors are positively correlated with those participating in planned giving, and those who volunteer and donate during their lifetimes are more likely to set up legacy giving plans.

A challenging question for NPOs and estate planners is how to generate interest in legacy planning for the more than 90% of US donors (and some smaller but significant percentage in other countries) who have not set up plans but who give significant amounts to NPOs during their lifetimes. What we propose in this paper should appeal to more donors as they can match preferences and time horizons, and maximize desired impact, of their gifts past their lifetimes.

2.2 | Nonprofits' motivation for creating endowments

Nonprofit leaders find it helpful to smooth "lumpy" funding sources and preserve institutional values, reputation, and goals. They may use endowments that retain a principal corpus and grow, using annual investment income for operations or donor-specified purposes (Hansmann, 1990) and (https://www.councilofnonprofits.org/tools-resources/endowments, 2022). Amassing long-term funds provides security and a sound financial plan for survival of the NPO. Duquette (2017, p. 1142) quotes Chang & Tuckman, 1994, and Tuckman & Chang, 1991 on a "venerable literature," showing that NPOs seek to diversify revenues among donations, program revenue, and other sources, to minimize risks of cutbacks and closure accompanying a shortfall in any one revenue source. Duquette (2017, p. 1160) further finds that "to reduce revenue volatility, unusual years of giving are tempered through saving and investing".[3] Bowman (2006) argues that NPOs with fixed assets should maintain endowments to cover these assets' costs, mitigating potential financial drain these assets often have on NPOs' operations.

With few exceptions, the literature fails to consider what we suggest—a strategy resulting in superior long-term financial outcomes for NPOs. Klausner (2003, p. 59) notes that "[foundation] payout rates are a tradeoff between current and future charity." Using a discounted cash flow approach, he argues that rather than assuming NPO clients benefit more from receiving funds today, lower payout rates lead to greater savings and investments resulting in greater amounts distributed to future generations. We designed our strategy precisely to achieve this benefit. Afik et al. (2019) examined decision-making patterns and foundation fund balances, distribution rates, and desired timelines for supporting chosen NPOs, with findings similar to what our strategy provides. Our approach follows Klausner, and a scenario that Afik et al. (2019, p. 424) discusses that allows a "tailored projection analyses," taking into account the "interdependence [among] assets, payout rates, and longevity."

2.3 | Practical considerations

Our strategy provides real and practical guidance for donors, NPOs, and planned giving professionals. In addition to making legacy donations through estate documents, donors can also use DAFs to implement our strategy during their lifetimes. DAFs are the "fastest

growing destination for philanthropy in the US and a rising force in other countries" (Charities Aid Foundation and UK Community Foundation, 2018; National Philanthropic Trust, 2020; Seibert, 2019; Strategic Insight, 2018, in Phillips et al. [2021] and "[… account] for 12 percent of personal charitable giving" in the US [p. 409], "nine percent in Canada and five percent in the UK" [p. 411]). They allow donors to avoid steep administrative and management fees and have lower barriers to entry, to remain anonymous, have little to no mandatory payouts, and the sponsor rather than the donor is responsible for regulations and reporting (Phillips et al., 2021, p. 410).
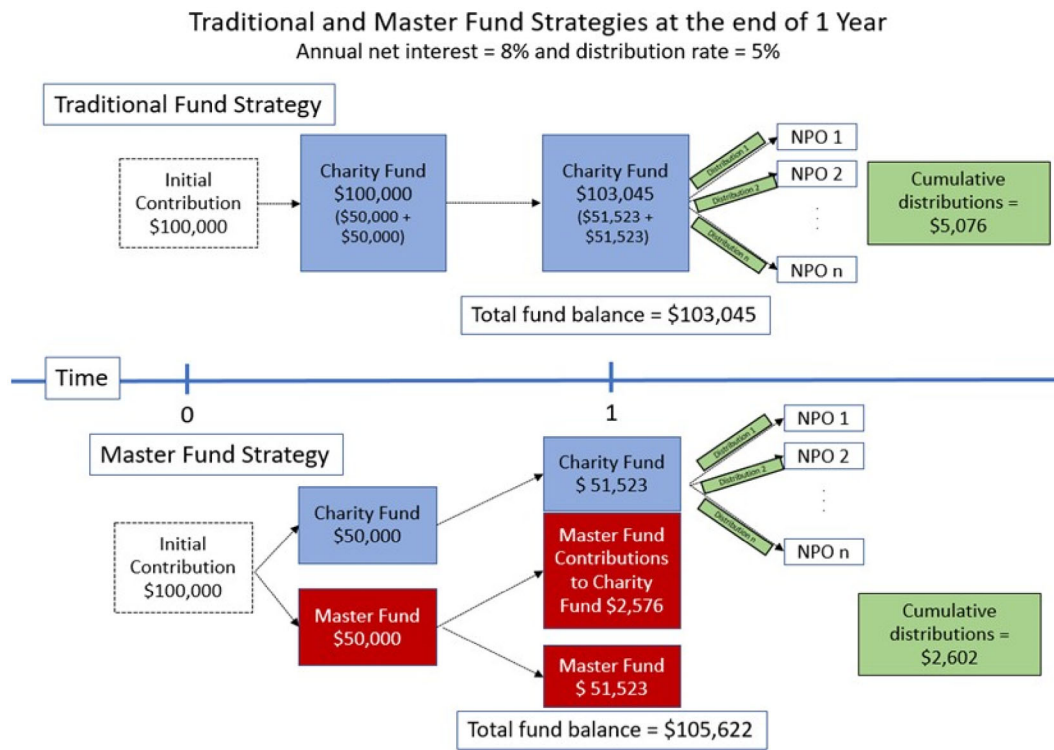
This topic, however, has sparked debate from many sources. Nonprofit officials and recipients of grants or services may prefer to receive benefits immediately, while other NPOs appreciate long-term funding support across many years. And although saving may increase an organization's survival chances, it may also affect the likelihood of receiving additional donations and public funding (Handy & Webb, 2003). Other researchers raise intergenerational equity and efficiency concerns (e.g., Hansmann, 1990), and recent research notes that DAFs, with "their dramatic growth and limited regulation" fuel debate over their benefits to charities relative to donors, sponsors, and others (Andreoni & Madoff, 2020, in Phillips et al. 2021, p. 410). In the future, this may result in regulatory reform for DAFs where, as Duquette (2017, p. 1161) notes, policy makers must consider the tradeoff between growth of investment income and directing funds to short-term programs.

We now provide more details of our strategy, including numerical illustrations and a discussion of how our strategy can generate superior funding to NPOs.
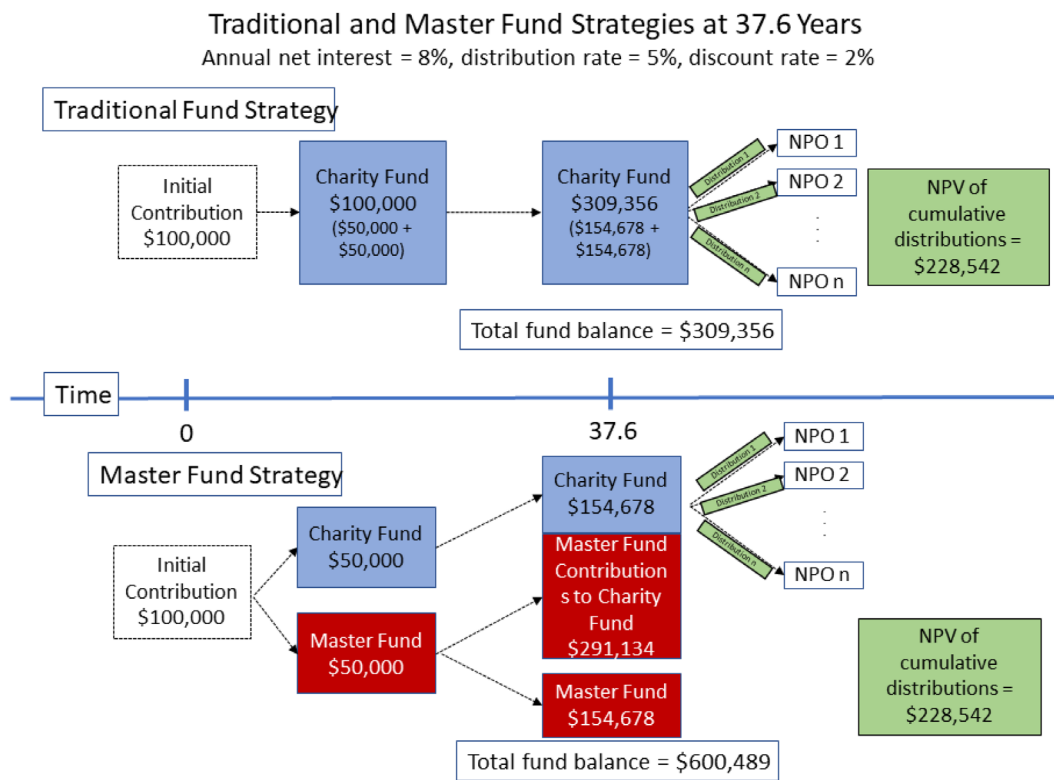
3 | DETAILS OF THE MASTER FUND STRATEGY AND ITS POTENTIAL ADVANTAGES

In this section, a net-present-value (NPV) analysis is used to compare the discounted cash flows of the MFS and the TFS. Doing so requires choosing a discount rate reflecting the value of a dollar in the future compared to today: the higher the discount rate, the less valuable a dollar is in the future. Using the MFS, the choice of discount rate is one of the factors **under exclusive control of the donor or the donor's designated fund manager** rather than under the NPO. In choosing an appropriate discount rate, the donor will need to take into account the needs of the chosen NPO and how funds going to the NPO today are valued compared to the future. Consider the following examples:

> *Case 1*: A donor who wants to support an NPO funding a medical researcher's work combating a rare, lethal, form of brain cancer. The 6-month survival rate for diagnosed patients is zero. The researcher developed and administered an experimental treatment to 10 patients. After 6 months, one patient died from the disease, two exhibit symptoms, and seven tested cancer-free.

Traditional and Master Fund Strategies at the end of 1 Year
Annual net interest = 8% and distribution rate = 5%

FIGURE 2 Strategies at fund creation and after 1 year.

Traditional and Master Fund Strategies at 37.6 Years
### Annual net interest = 8%, distribution rate = 5%, discount rate = 2%

FIGURE 3 Traditional and master fund strategies at breakeven.

Due to the immediate need for additional life-or-death research, we expect donors to value current funding and assign a high discount rate.

Case 2: A professor is retiring after 40 years at a two centuries old university, world renowned for its achievements in arts and sciences. Faculty members across departments contribute to

TABLE 2 Comparison of fund values under the TFS and MFS with different initial allocations and at different points in time.

Years	TFS				MFS 50/50 allocation			
	Master fund	Charity fund	Cum. distr. undisc.	Cum. distr. disc.	Master fund	Charity fund	Cum. distr. undisc.	Cum. distr. disc
0 years (init. contr.)	N/A	100,000	0	0	50,000	50,000	0	0
20 years	N/A	182,212	137,020	110,701	91,106	182,212	106,170	83,948
37.6 years (break-even)	N/A	309,305	348,925	228,542	184,678	445,678	368,915	228,542
65 years	N/A	702,869	1,004,781	457,770	351,434	1,493,596	1,568,676	640,836
	MFS 20/80 allocation				MFS 80/20 allocation			
	Master fund	Charity fund	Cum. distr. undisc.	Cum. distr. disc.	Master fund	Charity fund	Cum. distr. undisc.	Cum. distr. disc
0 years (init. contr.)	20,000	80,000	0	0	80,000	20,000	0	0
20 years	36,442	182,212	124,680	100,000	145,770	182,212	87,600	67,896
37.6 years (break-even)	61,871	363,938	356,921	228,542	247,484	527,686	380,909	228,542
65 years	140,574	1,019,160	1,230,339	530,997	562,295	1,968,033	1,907,013	750,676
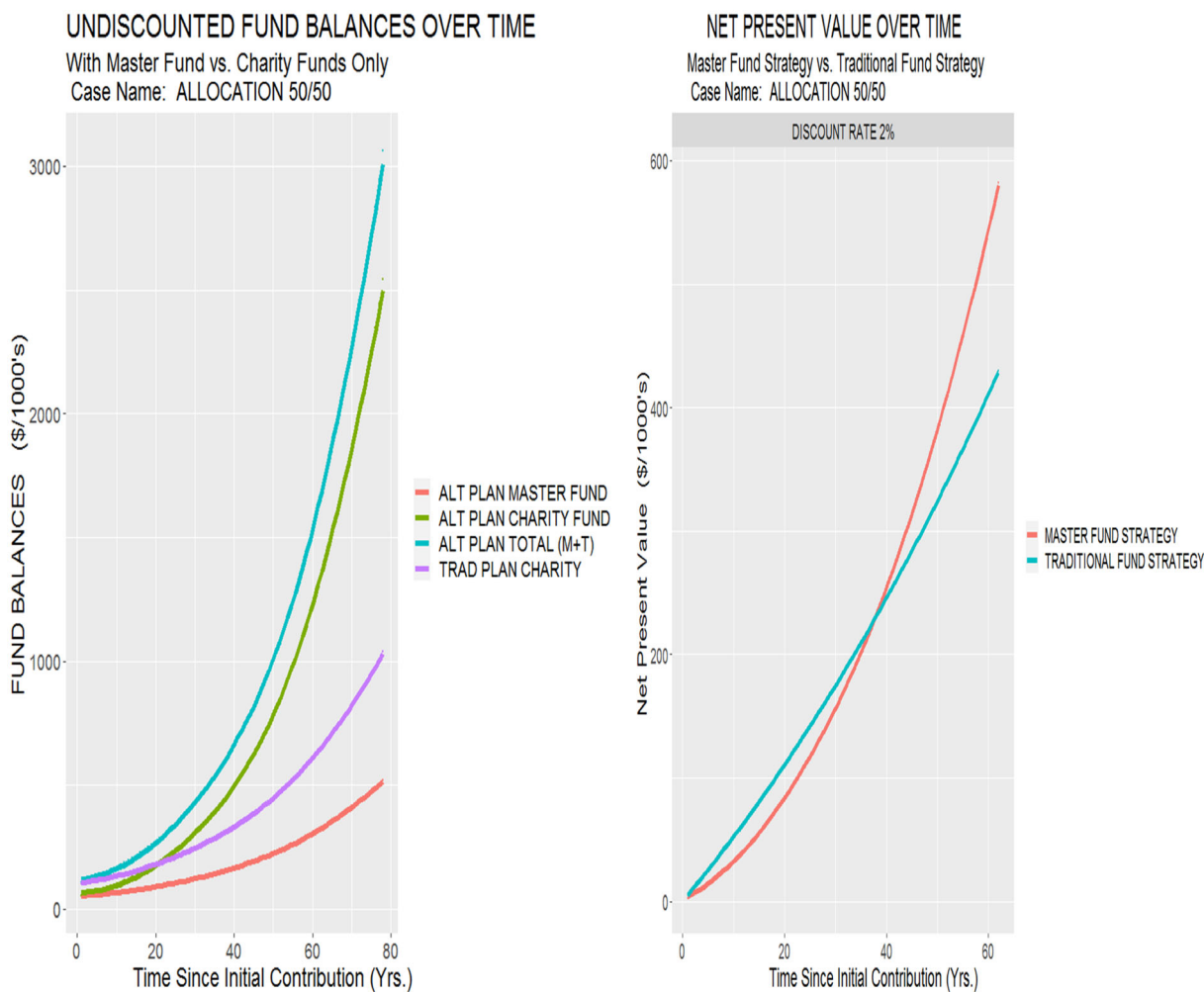
FIGURE 4 Fund balances and NPVs over time, 50/50 allocation.
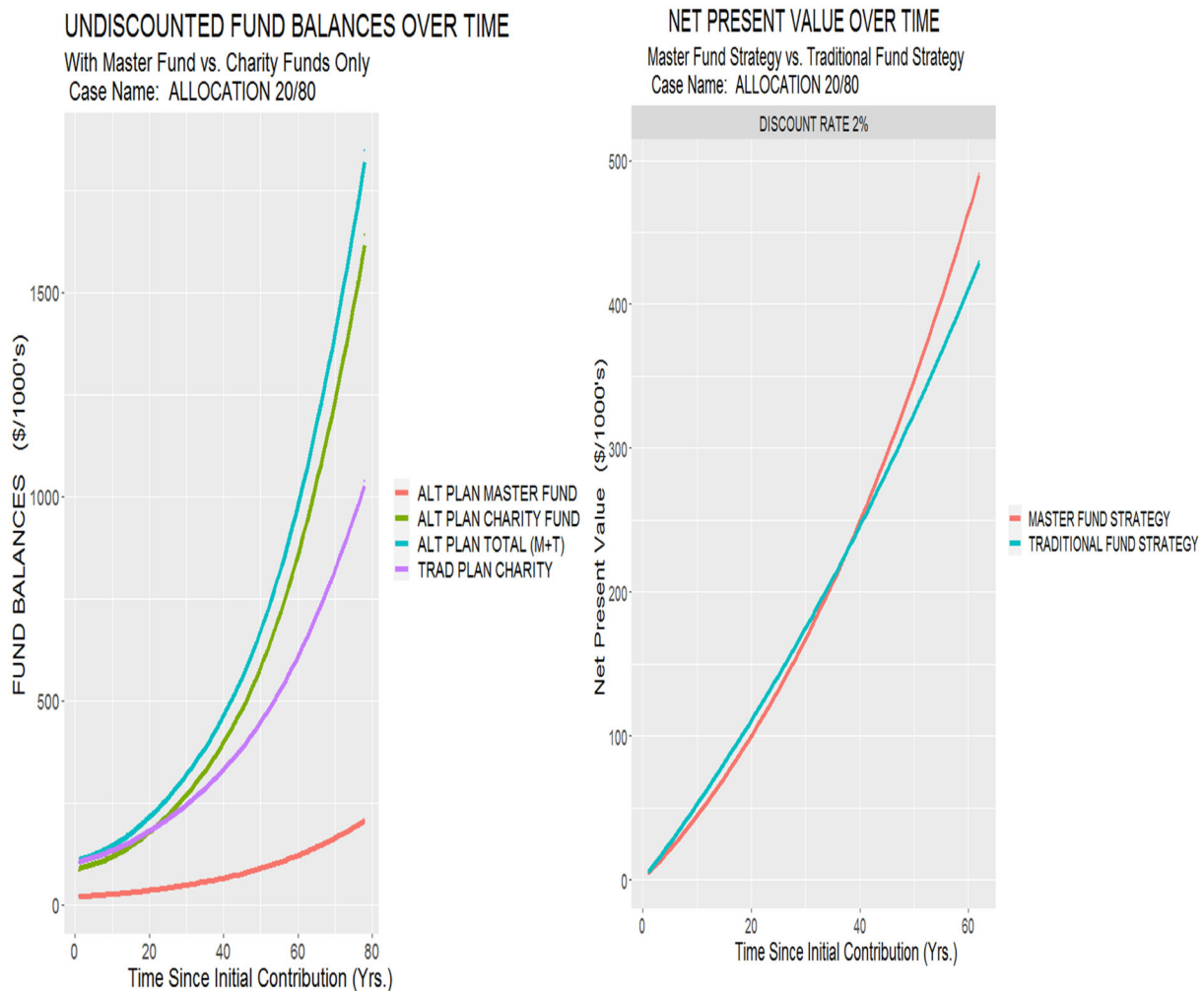
FIGURE 5 Fund balances and NPVs over time, 20/80 allocation.

current state-of-the-art in their disciplines, and businesses highly recruit graduates. The professor feels strongly motivated to preserve high quality teaching and research at the university and chooses a low discount rate, possibly 0%, reflecting the importance of supporting current and future students equally.

Case 3: A nonprofit with a mission to preserve an endangered rhinoceros species faces two threats: poaching aimed at killing the animals to sell their horns on the illegal market and long-term survival challenges due to loss of suitable habitat. A potential donor recognizes that the NPO needs funds immediately to implement a monitoring protocol, assisting authorities in locating and dismantling the poaching network. It also needs long-term funding for preserving habitat to sustain the species. The donor prefers immediate and future support and would assign a mid-level discount rate.

To use NPV to compare the TFS to the MFS described in Section 1 requires the donor to determine the following values.

- An initial donation amount, that
  - For the TFS, establishes the CF.
  - For the MFS, is allocated between the CF and MF.

- The investment earnings rates, net of expenses, of the CF and MF. We assume constant rates over time (the same for both funds), assuring that differences in NPVs arise from the structure of the funding strategies, not from superior investment or fund-management skills.

- The distribution rates of the CF and MF, assumed to be constant over time and the same for both funds.[4]

- The discount rate.

3.1 | Numerical illustrations

Recall from Table 1 that with the MFS, the combined value of the CF and MF after 1 year exceeds that of the CF using a TFS. We now show how compounded interest, together with the fact that the MF annual distributions go to the corpus of the CF, leads to long-term financial benefits. Specifically, we compute fund values and NPVs of distributions for both strategies using different assumptions for initial contributions, and different discount, investment, and distribution rates, all of which are assumed to be continuously compounded. We also show the **break-even time** in years—that is, the time until the

NPV of distributions to the NPO under the MFS equals that under the TFS, after which the NPV of the MFS continues to exceed that of the TFS. (Formulas and rigorous mathematical analysis of conditions under which there is a break-even time is available in a companion paper by the authors.)

3.1.1 | Fund balances with different initial allocations

We use a $100,000 initial donation, net investment return of 8%, a 5% distribution rate, and a 2% discount rate. Recall that for the TFS, the initial contribution of $100,000 goes into the CF, while with the MFS, the donor must allocate the $100,000 between the CF and MF. We examine three allocations:

- 50/50 allocation: the donor allocates $50,000 each to the MF and CF.
- 20/80 allocation: the donor allocates $20,000 to the MF and $80,000 to the CF.

- 80/20 allocation: the donor allocates $80,000 to the MF and $20,000 to the CF.

Figure 2 shows fund balances and distributions using the 50/50 allocation for the MFS at the end of 1 year and Figure 3 shows the same information at breakeven, 37.6 years.

After 1 year, the NPV of distributions to the NPO under the TFS total $5025 with a fund balance of $103,045 while discounted MFS distributions total $2575 with a total funds balance of $105,662.

After 37.6 years—which is the break-even time—the TFS and MFS both provide discounted cumulative distributions of $228,542 to the NPO, with fund balances of $309,354 (TFS) and $600,487 (MFS). Given the assumptions, at this break-even time and thereafter, the MFS produces larger annual distributions to the NPO.

If we think of this comparison as a horse race, the TFS is the early pacemaker: horses representing the MFS trail behind. Horses with the greatest initial CF allocation run closest to the pacemaker, and horses with the highest level of MF allocation trail farthest behind. As the horses approach break-even time, they are neck-and-neck. MF horses coming from the back of the pack are traveling at a faster pace and
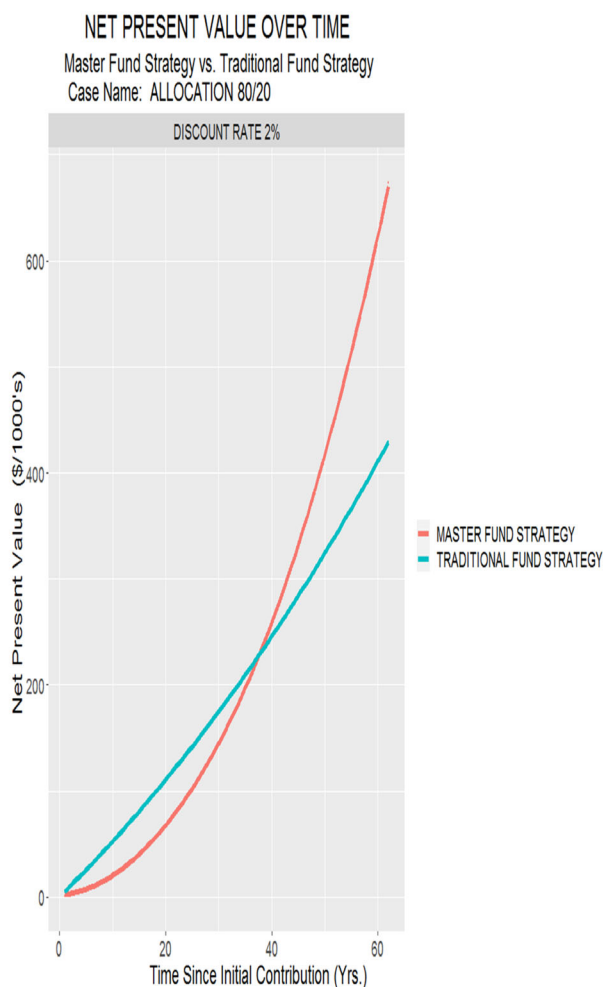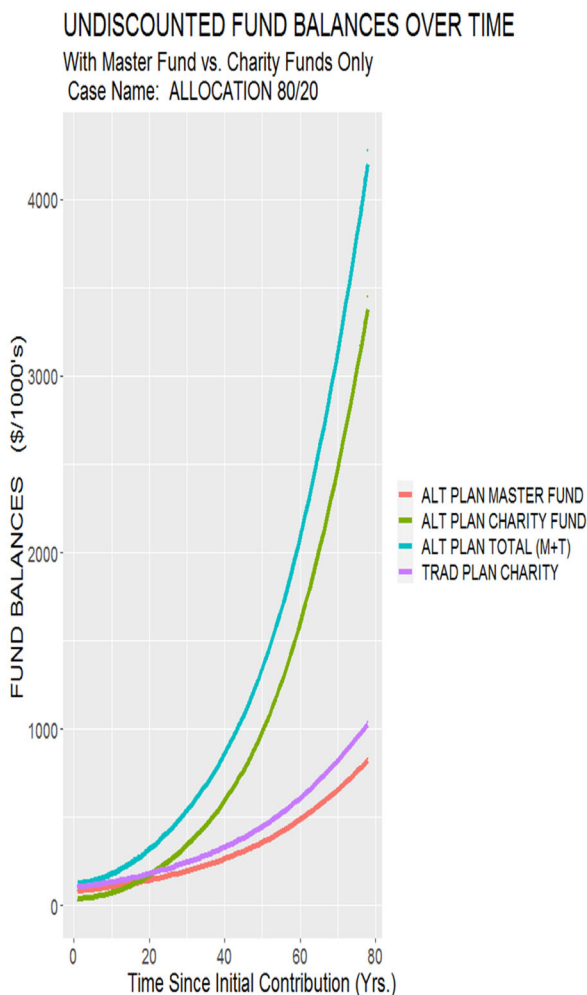

FIGURE 6 Fund balances and NPVs over time, 80/20 allocation.

continue to do so after they pass TF horses, and the horse with the biggest allocation to the MF will continue to pull away from the pack. Different discount rates result in different break-even times when the horses are all even, and if the discount is sufficiently high, the pace-maker wins!

While all fund values depend on the initial allocation to the CF and the MF, it is interesting to note that the break-even time does not. To understand why, note that funds initially allocated to the CFs under both strategies produce the same results. (In fact, the TFS is an MFS with a zero initial allocation to the MF.) Differences arise when some initial funds in the MFS go to the MF. The length of time it takes for a contribution to the MF to produce the same discounted value of NPO distributions as an equal contribution to the CF under the TFS is the same, regardless of the size of the contribution.

Table 2 provides more numerical results for the allocation scenarios and illustrates that, given the assumptions on net investment returns, distribution rates, and initial allocations, the MFS produces superior financial benefits to NPOs over time. At time zero, all strategies start with $100,000, and all funds grow because the 8% investment earnings rate exceeds the 5% distribution rate. Under the MFS, after 65 years and subtracting distributions made to the NPO, total fund values are $1,845,030, $1,159,734, and $2,530,328 for the 50/50, 20/80, and 80/20 allocations, respectively compared to $702,869 with the TFS, while the NPV of 65 years of distributions are $640,836, $530,997 and $750,676, for the same three MFS allocations, and 457,770 for the TFS.

While neither the time to break-even nor the NPV vary with initial fund allocation under the MFS, undiscounted CF values are significantly impacted. The first panel in Figures 4–6 show graphs of the undiscounted fund balances for the MFS under the allocation scenarios, while the second panel shows the NPV of distributions to NPO's for these same allocations. Even though the NPV at break-even and the time to break-even is the same for all three allocation scenarios, both the undiscounted fund balances and the NPV's are substantially different for other time frames.

Figure 7 shows break-even times for the TFS and MFS with 50/50 allocation varying the discount rate from 0% to 7% that are summarized in Table 3.

In Figure 7, the slope of the graph becomes increasingly steep as the discount rate rises, with break-even times increasing from 54 years at 6% to 66.5 years at 7%. As the discount rate approaches the 8% investment-rate return, the slope approaches infinity, at which point no break-even time exists. When the discount rate exceeds the investment earnings rate, the donor's optimal strategy is to distribute all donations immediately to the NPO.

3.2 | Case discussion

In this section, we present optimal strategies under different rate and payout scenarios. Using Table 2, reconsider the retiring professor's wishes to support current and future students. The professor likely

TABLE 3 Time in years until breakeven under different discount rate.

Discount rate (%)	0	2	4	6
Break-even time (years)	34.2	37.6	43.1	54.0
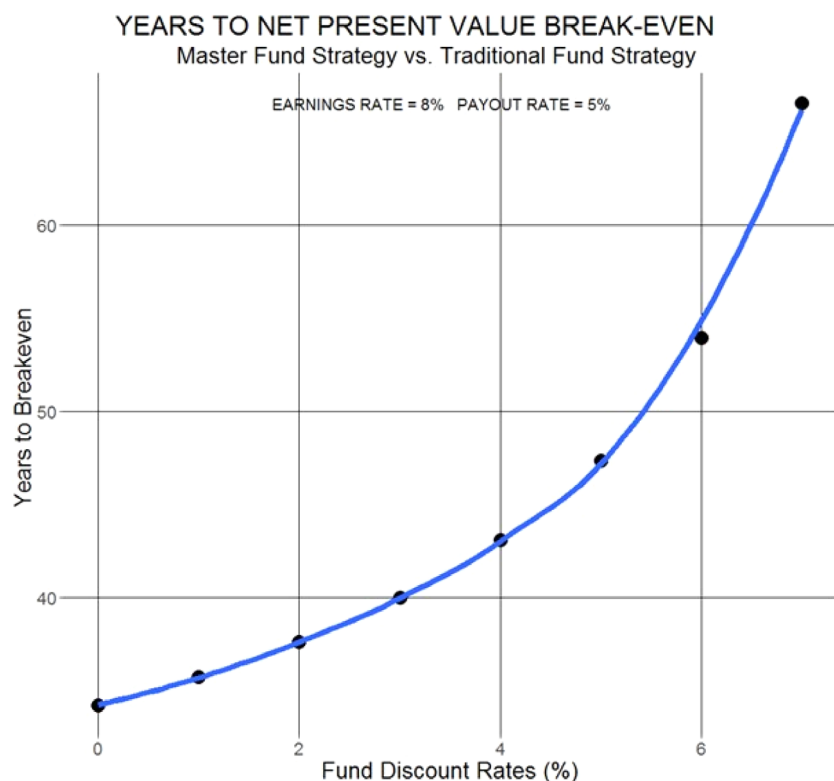
FIGURE 7 NPV, 50/50 allocation, discount rate varies.

chooses a low, possibly even a 0% discount rate, valuing money spent on all students equally. Using a 50/50 allocation, and a 0% discount rate, the NPV of distributions will break-even in 34.2 years. At that time (see Figure 4), the CF (TFS) will be $279,000, and the combined funds of the MFS will be $518,000. Twenty-five years after break-even, the cumulative distribution to the university from the MFS will exceed the TFS by $367,000, while the fund balances of the MFS will exceed the TFS by $875,000. The professor, wanting to make a long-term impact and to benefit as many students as possible, obviously prefers the MFS to live on in perpetuity with maximum contributions to the university.

In contrast, consider Case 1, where the researcher needs funds immediately to treat brain cancer. If the researcher uses a discount rate of 6%, the time to break-even is 54 years (Table 3). The MFS results in greater funding over time compared to the TFS; however, given the urgency of the situation, if the professor sets a higher discount rate greater than the rate-of-return on investments then the professor prefers immediate contributions to the NPO to investing in either the MFS or TFS.

4 | SELECTING THE RIGHT STRATEGY

As shown, results from selecting a particular strategy vary depending on assumed values including the initial allocation of contributions, net rate of investment return, payout rate, and the donor's discount rate(s). While all fund balances and distributions to the NPO depend on these factors, the donor's decision to choose a MFS, a TFS, or a direct contribution to the NPO comes from mathematics and is much simpler:

4.1 | Recommended donor strategies

If the assumed net rate-of-return on investment:

- exceeds the discount rate, the MFS eventually provides a greater NPV to the NPO than the TFS, and the TFS eventually provides a greater NPV to the NPO than an immediate contribution to the NPO's operations.
- is less than the discount rate, an immediate contribution to the NPO's operations provides a greater NPV than an MFS or a TFS.

The key value to donors of following one of these strategies is future control of distributions.

Finally, a donor can combine different preferences for donations using a single MFS. We now reveal that our university professor is medical school faculty and directed the former student's start to the brain cancer project. The professor's only child heads the rhinoceros-preservation project. We now show how the professor can use a specific optimal decision-funding strategy for all three projects that addresses these potentially conflicting interests.

- For brain cancer research, the discount rate the professor chooses likely exceeds the net investment earnings rate for invested funds: allocate some contributions immediately for the research.
- If the discount rate the professor applies to supporting future university activities is lower than the investment earnings rate: give a second portion of total donations to a MF, providing future support for the university.
- As the rhinoceros project requires current and future support: divide funds between immediate operations and additional contributions to an MFS.

Note that donors can use a single MFS for supporting the university and rhinoceros projects. The donor creates a single MF distributing at a payout rate determined by the donor (or fund management committee) to a single CF. The CF pays out at a determined rate, and each beneficiary receives a fixed percentage of the donor's determined total payout from the CF.

5 | SUMMARY

This paper offers a novel legacy-donation strategy—both theoretical and useful for estate planning—that provides donors with moderate wealth the ability to control investment and payout policies without the expensive overhead that accompanies private foundations and may result in superior financial outcomes to NPOs and, ultimately, their beneficiaries. The main idea with the Master Fund Strategy is for the donor to create two endowment funds: a Charity Fund whose annual distributions go to the NPO and a Master Fund whose annual distributions go to the Charity Fund to increase the corpus. Donors may implement the strategy in their lifetimes or as legacy donations and can control their donations in a more convenient and easy-to-implement manner through an existing NPO. The strategy expands opportunities for donors because it requires a smaller corpus contribution with lower management costs than a traditional fund, provides tax savings comparable to other planned giving vehicles, and donors may implement it either during their lifetimes using DAFs, or as part of a legacy plan.

Going forward, a key question is the degree to which donors are interested in the MFS. To that end, we have created a website: at http://faculty.weatherhead.case.edu/dxs8/master-fund/ that explains the idea of the MFS. As future research, we are planning to include a survey to collect data to answer this question.

DATA AVAILABILITY STATEMENT
All data in the manuscript is freely available and can be used by anyone.

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ENDNOTES

[1] Literature on this topic consists of hundreds of studies; we summarize only a few.

[2] Routley and Sargeant (2014, p. 869) also noted "the bequest gift is laden with symbolism, a function of the reminiscences of the individual and reflective of the need for the self to live on and achieve a degree of symbolic immortality."

[3] Large literatures on the economic policy of the nonprofit sector considered how policy affects donations through tax subsidies and grant-making but have focused on policy effects on inputs, not directly addressing tax consequences. Most studies concluded that the tax deduction is treasury-neutral, inducing as many additional contributions as the government loses in tax revenue (see, articles quoted in Duquette [2017], e.g., Auten et al., 2002; Bakija & Heim, 2011; Feldstein & Clotfelter, 1976; Peloza & Steel, 2005; Randolph, 1995), and that government grants to charities "crowd out" private contributions incompletely (e.g., Duquette, 2017, p. 1161: Andreoni, 1989; Bergstrom et al., 1986; Gruber & Hungerman, 2007; Ribar & Wilhelm, 2002; Warr, 1982)."

[4] As described, the MFS allows account holders control over funds distribution as regulations allow. Some may choose to use their funds as "flow-through vehicles, disbursing them to charities quite quickly, while others may disburse little if anything for years" (Phillips et al., 2021, p. 410).

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