The Benefits and Costs of Donor Advised Funds*

James Andreoni
University of California, San Diego
and NBER

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Abstract

Donor Advised Funds (DAFs) are becoming a major source of charitable donations in the US, responsible for 1 in 10 dollars donated to charity in 2015. In 2016 Fidelity Charitable became the largest charity in the US, passing the United Way and Salvation Army. Paradoxically, most people have never heard of them. This leads us to ask, whom do DAFs serve? Why and how are they valuable to those who use them? What is the cost of DAFs to the US Treasury, and what are the benefits of DAFs to the taxpaying public? Could DAFs possibly create more in new charity than they create in additional reductions of tax revenue?

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1 Introduction

Consider these two seemingly contradictory facts. First, Fidelity Charitable Gift Fund polled the clients of its parent organization, Fidelity Investments, to ask them if they knew what a Donor Advised Fund is. Moreover, the poll was limited to the customers of Fidelity Investments who had the kind of financial assets that could benefit from a Donor Advised Fund. However, 64% of those surveyed had "no idea" what a Donor Advised Fund is.[1] The second fact is that in 2016 the biggest charity in America was Fidelity Charitable Gift Funds, and its sole purpose is to establish and manage Donor Advised Funds.[2] How, you may ask, can the biggest charity in America provide a service that a substantial majority of its most likely customers have no idea about?

The first objective of this article is to introduce readers to Donor Advised Funds (or DAFs) and to explain how they interact with other tax policy toward charitable giving. In a nutshell, DAFs are a financial vehicle usually offered by investment houses like Fidelity, that act as tax-free savings accounts for charitable giving—but the full picture is far more complicated than just that, as we will see.

An important reason for knowing about DAFs is that a significant share of annual charitable giving passes through them—which in the latest data is 10% of all giving. And, just as important, they are largely unknown because they tend to be most beneficial for the sliver of society that both has considerable financial assets and the resources to give meaningful amounts to charity—less than seven tenths of one percent of all donors to charity.

This then invites us to ask how are DAFs used, and how do those who choose to use them benefit from doing so? I will describe many ways that DAFs allow people to simply use the tax system to rearrange their portfolios in order to save on taxes either today or at some point in the future, but do not encourage more charitable giving. I will describe other ways in which DAFs help people save for gifts in the future in ways that may help them actually build more savings or to reach their goals faster, both of which could be considered successes of the policy.

This brings us to the main intention of this article, which is to make every attempt at providing a fair assessment of the social benefits and social costs of this financial innovation called Donor Advised Funds. As we will see, many of the uses for DAFs are purely for financial gain and are not productive in terms of rewarding increased giving to charity. If they are used this way, they may create no benefits for society. On the other hand, the

[1] See the Fidelity Charitable "The Giving Gap: Donor Awareness and Use of Strategic Giving Methods," page 5.

[2] See the Chronicle of Philanthropy, https://www.philanthropy.com/article/Fidelity-Charitable-Knocks/238167.

greater tax savings they afford may encourage people to set higher giving goals, making it possible for society as a whole to be better off.

Although they have become popular only recently, DAFs have been with us since the 1930s, shortly after the introduction of the charitable deduction.[3] Had they been introduced as new legislation right now, the Congressional Budget Office would be required to "score" the legislation to estimate whether the social value of the proposal out-weighed the shared costs. While we now have the benefit of time to look at the growth and uses of DAFs, unfortunately the legal rules surrounding DAFs protect the individual DAF accounts from public scrutiny. But, as I hope to convince you, we can learn quite a bit about the flows of benefits and costs of DAFs to make intelligent conclusions about whether DAFs make our society better from a public policy perspective.

As we continue, it is important to keep in mind that the point of this paper is to look at things from the point of view of a naive taxpayer. That is, we should not concern ourselves with how this institution of Donor Advised Funds affects our own giving, tax bill, social esteem, fundraising goals, prestige, or self-image. Our job is to learn whether our country as a whole has made a good bargain when extending extra tax preferences to those who give through donor advised funds.

2 What is a Donor Advised Fund?

Before talking about DAFs, it will be most efficient to first discuss standard tax policy toward charitable giving. We can then contrast that with how DAFs expand the possibilities for giving and tax savings.

2.1 Tax Policy Toward Giving: The Basics

In US tax law, to be a charitable organization, the entity must gain a tax classification from the IRS as a 501(c)(3) organization. Individual tax-filers who itemize deductions can deduct their donations from their taxable incomes. If one is facing a marginal tax rate on income of, say 35%, then a $100 donation will reduce a donor's tax bill by $35, resulting in a net cost of $65 for each $100 given. While most states with income taxes also allow a deduction, further lowering the price of giving, we lack the information necessary to add state taxes to the analysis.

[3]The income tax was introduced in the US with the Revenue Act of 1913, after ratification of the 16th amendment to the constitution. The War Revenue Act of 1917 revised the income tax code to include a charitable deduction.

In addition to cash one can also give appreciated assets, such as equities, artworks, and real estate. Imagine giving something easily valued, such as stock in a publicly traded company. If the asset were to be liquidated before giving, the owner would owe capital gains tax of as much as 23.8% on long terms gains (assets held for a year or more). Thus, stocks worth \$100 that had been purchased for \$40 would first generate \$14.28 in capital gains tax (that is, 23.8% of the gain of \$60), leaving the donor with \$85.72. Giving this net amount to charity then earns a tax deduction which reduces income taxes by \$33.94 (that is, \$85.72 times the marginal tax rate of 0.35). In sum, the \$100 asset yields \$85.72 for charity and a net tax savings of \$19.66. However, if one gives the asset directly, then the charity gets the full \$100, the \$14.28 tax on capital gains is forgiven, and the full \$100 face value of the asset can be deducted from income. Given this way, the \$100 asset yields \$100 for the charity and swing in the donor's bank account of \$49.28 (\$14.28 + \$35).

Clearly, giving the asset directly is greatly advantaged for tax purposes. But the difference between giving most assets and giving cash is only a technical one. The irony in giving assets is that most charities follow a policy of liquidating any non-cash gifts, like equities, as soon as possible upon receipt.[4] So any difference between the donor or the recipient liquidating the asset is of little practical consequence, yet the consequences are very real for the donors tax payments and, potentially, for the charity's receipts.

Two seldom discussed constraints on giving are potentially quite important for DAFs. First, gifts of non-cash assets that do not have any easily identified "fair market value," such as real estate, works of art, or shares in closely held corporations, are required to have professionally conducted appraisals if their values are of any significance.[5] Second, there are limits on the fraction of income that can be claimed as a charitable deduction each year. Donors who are giving cash can only deduct up to 50% of Adjusted Gross Income (AGI, which can be thought of as income net of standard adjustments, such as subtracting IRA contributions and adding in unemployment benefits and IRA distributions). If appreciated property is given, the limit is 30% of AGI.[6] Deductions that exceed these caps can, however,

[4]There are several compelling reasons for this. One is to avoid any apparent conflicts of interest. Second, this protects the charity from being a victim of any insider trading–giving away a stock that is about to decline substantially in value could be a very shrewd move for someone with an informational advantage.

[5]People claiming donations of assets above \$5000 must seek professional appraisals of the assets and submit form 8283 with their taxes. For property worth \$500,000, they also need to include a written "qualified appraisal." For things worth less than \$5000 the IRS basically trusts donors to be truthful. See IRS tax code, sections 170(f)(11)(C) and 170(f)(11)(D). Interestingly, Colinvaux (2013) notes that, for historical reasons, the valuation method for deducting assets has been set at the "fair market value" to the donor rather than the more appropriate notion of value to the charity. Donating a rare Picasso painting to a homeless shelter and used clothing to an art museum are not the same as the switch of these recipients.

[6]This limit applies to "capital gains property," but there are a complicated set of exceptions. For a full description, see https://www.irs.gov/charities-non-profits/charitable-organizations/charitablecontribution-deductions.

be carried forward up to five years.

A final aspect to keep in mind is that only those who itemize deductions on their tax returns can claim a charitable deduction. Thus, the charitable deduction is less likely to be available to those with lower incomes, who live in states with small state income taxes, or do pay a home mortgage.

2.2 Donor Advised Funds: A Primer

Simply put, a DAF is a savings account for money that has already been contributed to the cause of charitable giving, but has yet to be granted to a particular charitable organization. Once money is put into this savings account, it cannot be diverted to any purpose other than supporting a 501(c)(3) non-profit organization. The money in the savings account can be invested much like money in an IRA. Any gains or trades are not subject to capital gains tax, for instance (although brokerages can collect management fees and trade fees). The key feature of DAFs is that they break the link between when one claims the tax deductions for charitable giving, and when those designated dollars are actually employed for charitable purposes. In particular, in the year a donor transfers cash, securities, or other assets into a DAF they can claim the full charitable deduction on income taxes for the DAF contribution. The assets can be traded within the DAF without further tax consequences for the donor. Ultimately, any assets in the DAF can be liquidated and given to charity.

Why is this called a Donor *Advised* Fund? This is an important but often technical legal distinction. Consider the example of a person who owns stocks and mutual funds that are managed by Fidelity Investments. The person also has a DAF with Fidelity Charitable. Imagine she wants to transfer funds from her investment fund to her DAF. From the donor's point of view, this new account looks and acts much like the other accounts with Fidelity, except that transfers *out* of this account must be going to 501(c)(3) charities. Technically, however, the money in that DAF becomes the legal property of Fidelity Charitable. Fidelity Charitable is itself a 501(c)(3) organization that coordinates with Fidelity Investments (a profit making entity) to offer investment funds for DAF accounts. Because Fidelity Charitable is already a qualified charity, the donor can claim a tax deduction in the year assets are transferred to the DAF. By agreement with Fidelity, the DAF account holder, while technically not the owner of the money, retains the rights to "advise" Fidelity Charitable on how to invest and trade the assets in the account, and ultimately when and to which other 501(c)(3) organization the assets will be granted.

It is important to understand how DAFs differ from trusts or private foundations. First, the typical foundation is much larger. In 2015 private foundations averaged about $9.5 mil-

lion in assets, while individual DAFs averaged a mere $292,000. However, DAFs can be opened and ready to operate in a matter of a few hours, and at low cost. Private foundations, by contrast, can take months or years to establish, involving great expense. As a result, in 2015 there existed around 82,000 private foundations, but nearly 270,000 DAFs. Importantly, foundations do much more than grant money to other organizations, and often pursue agendas of their own, employing staff and affording allowances to trustees. DAFs can only make charitable grants. A contentious difference between DAFs and foundations is the "five percent payout rule". The rule states that private foundations must distribute at least 5% of their assets annually as either grants or as "eligible administrative expenses." The point of this rule when adopted was to prevent trusts and foundations from living on forever, and to prevent them as masquerading as tax free ways of bequeathing guaranteed employment as trustees to, for example, one's children. DAFs have no such legally binding payout rules.[7] In principle, since DAFs allow the advising rights to be given away or bequeathed upon death, DAFs can legally live forever without ever giving a nickel to help the public. Just how long money lingers in a DAF will be an important feature to be explored by us later. Much of the debate on potentially establishing payout rules for DAFs, we will argue, needs to be refocused on more relevant statistics.

Finally, notice how easy it is to get the tax benefits of contributing appreciated assets using a DAF. Suppose one wants to give $100 to a local homeless shelter, which cannot accept securities as contributions. One can simply transfer $100 in securities from a Fidelity Investments account to the Fidelity Charitable DAF account, liquidate the asset tax free and, using simple internet tools, "advise" Fidelity Charitable to send a check to the shelter. The orders can be given in a few minutes and the transaction is complete within 24 hours.

As should now be clear, giving money through a DAF is very much like giving money directly from your brokerage account, with three important differences. First is *Timing:* The tax consequences are absorbed when money goes into the DAF rather than when it is granted out of the DAF. Second is *Convenience:* It is far easier to use securities for donations

[7]Interestingly, Fidelity Charitable has voluntarily adopted payout rules on their own. In their *Fidelity Charitable Policy Guide*, page 18, is a section entitled "Minimum Giving Account" in which they state that after three years without giving from an account, "Fidelity Charitable will make every effort to contact the Account Holder to encourage grant recommendation(s) from the Giving Account. For every year thereafter in which no grants are recommended by an Account Holder, Fidelity Charitable will make grants from the Giving Account to IRS-qualified public charities approved by the Trustees of Fidelity Charitable." While vague about how much will be forcibly given from the account, they are clear about DAFs with longer times of inactivity, stating, "If a Giving Account has entered its seventh year of inactivity (i.e., no grants recommended by an Account Holder), Fidelity Charitable will consider the Giving Account to be abandoned and will grant the entire balance of the Giving Account to one or more IRS-qualified public charities approved by the Trustees of Fidelity Charitable." If an investor holds another DAF at, for instance, Vanguard Charitable, then simply granting $100 each year to the other DAF would appear to allow a donor to easily circumvent this rule.

by converting them to cash within the DAF, thus avoiding all capital gains taxes. Third is *Commitment:* Once in the DAF, funds can make gains or losses, but any balance in the account can only be withdrawn in the form of grants to charitable organizations.

The most important among these three differences is timing. If DAFs are to have a positive effect on giving, it is most likely to be that timing loosens some constraints that were holding back givers in the prior tax policy. Perhaps the constraints the policy is lifting only allow donors to give the same amount as they did before, but just at a bigger cost to the US Treasury. Or, worse yet, the fact that funds can go un-granted for long periods presents the possibility that DAFs may actually reduce (in present value terms) the size of the charitable sector while also reducing the size of the government sector, and thus only enhancing the personal fortunes of the donor or the brokerage.

We also need to see the role of the second difference, convenience. Many donors give money in small bits here and there. Few charities have the capacity or willingness to accept one or two shares of stock to cover a small donation, but DAFs can accomplish the same thing for the donor with little effort. The question for our analysis will be whether this convenience translates into simply a different form of giving the same amount, or whether donors use this feature to actually give more.

2.3 How Important are DAFs from a Policy Perspective?

Do DAFs involve enough money for policy makers to really worry about? Perhaps surprisingly, the answer is yes, and their importance is growing.

Figure 1 illustrates the levels and trends. From 2007 to 2015, contributions to DAFs rose by 240% to a total of $22.26 billion per year. Grants from DAFs to charities rose by a similar percent, to $14.5 billion. Year-end-assets—the unspent contributions—climbed to $78.64 billion, a 255% increase. Over the same period the number of DAF accounts grew as well, but at a relatively slower pace of 178% to almost 270,000 accounts.

How do DAF account holders compare to the average donor? Since no individual level data is available on DAF accounts, we use the IRS Statistics of Income to see what, on average, Americans claim as charitable contributions on their itemized tax returns. Figure 2 provides the comparison. In 2014, for example, looking at only tax returns that took a charitable deduction, the average charitable deduction was $6,089. In that same year, the average DAF account received contributions of $82,429, while making grants that averaged $51,240 per account. If, to be conservative, we assume that no one has more than one DAF account, an assumption we know to be false, then depending on whether you choose grants or contributions as the more appropriate comparison, the average DAF account donor is

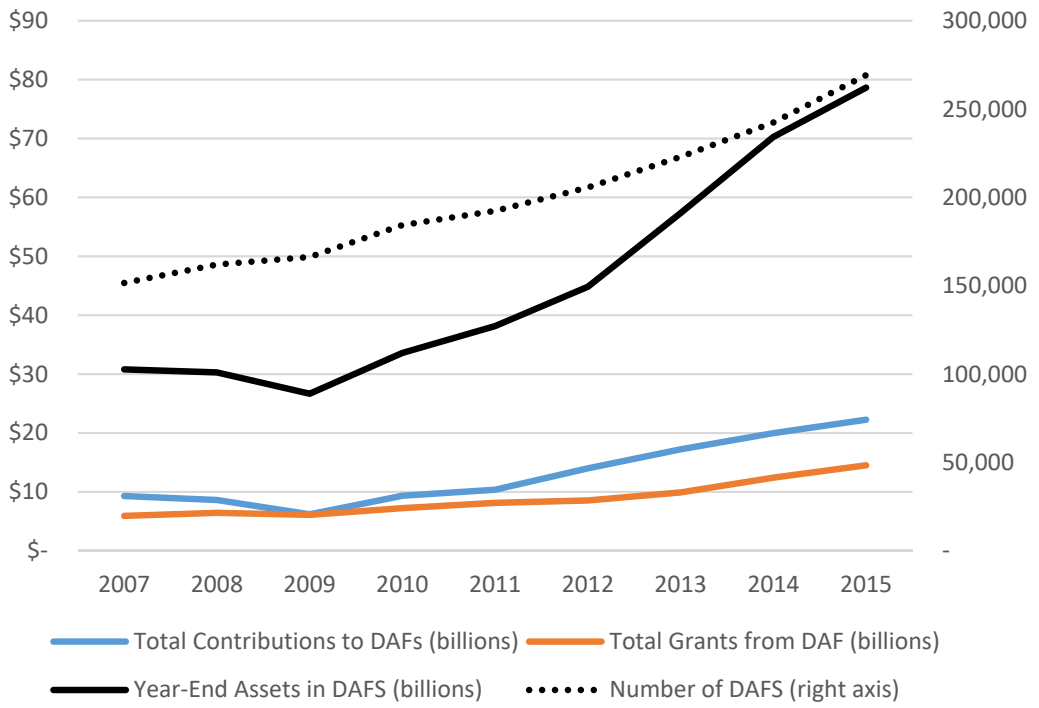


Figure 1: Increasing Contributions to and Assets Held in Donor Advised Funds. (Source: National Philanthropic Trust, *Donor Advised Fund Report*, 2011-16.)

giving between 8 and 14 times the average amount given by those who deduct the gifts on their taxes.[8] Using the Statistics of Income to infer what income level is most likely to be associated with these amounts of giving, we find that the gift of $6,089 is best predicted by an income of $187,726.[9] Using grants as the appropriate comparison to SOI deductions, our methods suggest the average DAF donor has an income of $1,361,651 per year, while using contributions as the appropriate number would project an average income of $2,159,230 per year. Both of these figures could be much bigger if taxpayers have more than one DAF account (Fidelity reports that their donors average over 2.5 accounts each, for instance). All this underscores the main point here: Donor Advised Funds are clearly a financial instrument that, when measured by dollars that pass through them, are used primarily by people at the very peak of the economic ladder.

This point is shown more clearly in Table 1. Here we show that the year-end balance in DAF accounts averages $290,000 in 2014. Recently the US Census Bureau released its

[8]The 2017 Fidelity Giving Report says that only 54% of donors have just one giving account. 30% have 2 to 4 accounts, 9% have 5 to 9, 4% have 10 to 19, and 3% have over 20. Tallying these up at the low end of each category indicates 2.6 accounts per donor. If Fidelity's pattern is true among other organizations that provide DAFs, we would have to multiply the figures here by 2 or 3 for more accurate amounts.

[9]Using the average total income and the average total charitable deduction from the 2014 SOI, we fit a quadratic regression of income on donations and use this to predict the unknown variable.

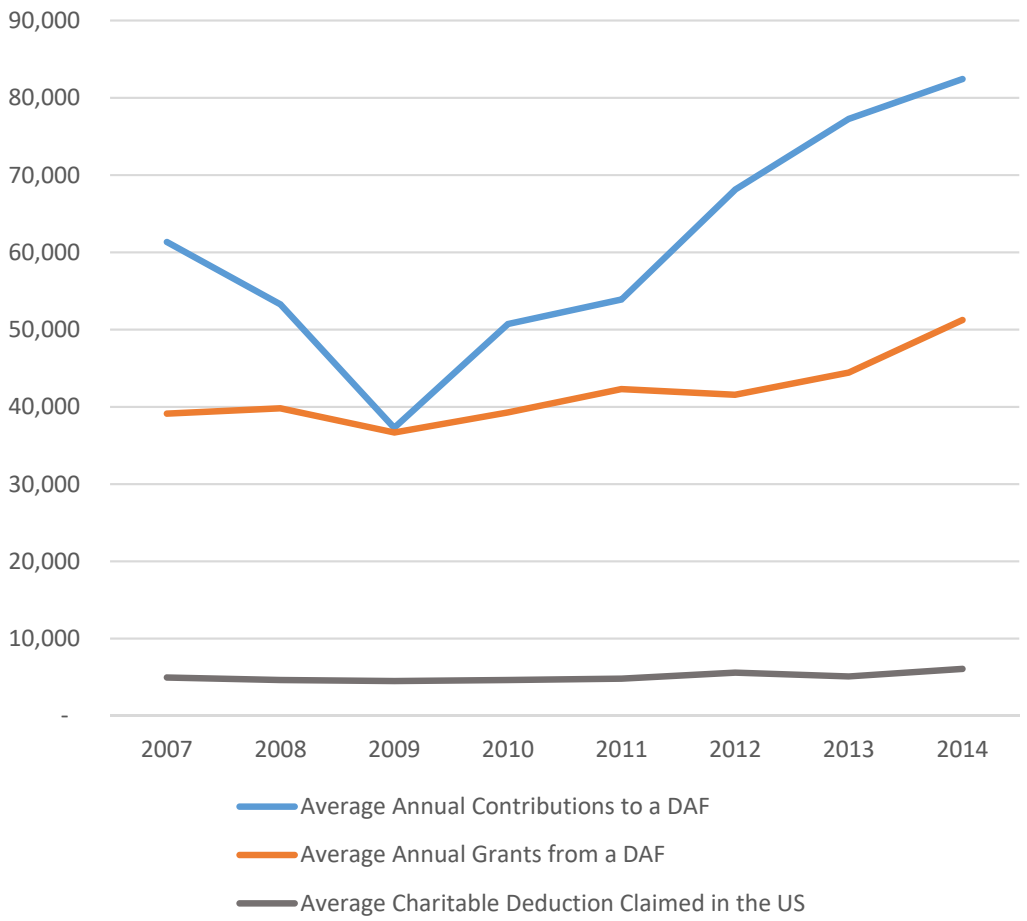


Figure 2: Annual Contributions and Grants per DAF Account, Compared to Average Charitable Deduction of of all Taxable Returns with Charitable Deductions. (Source: National Philanthropic Trust, *Donor Advised Fund Report*, 2011-16; and IRS Statistics of Income reports in individual income tax returns)

estimates of the mean and median household wealth in the US. Looking only at liquid assets, that is, those that can easily be transported to a DAF, the median value is $39,000, while the mean is $195,000.[10] These are both swamped by the average balance in the giving accounts, which again shows that the population selecting DAFs is heavily skewed toward the wealthy.

A final and striking presentation of this fact is shown in Figure 3. This plots the annual DAF contributions as a percent of all charitable deductions reported to the IRS. The first surprising result is that this has grown from around 5% to just over 10% of all deductions claimed for charitable giving. The relatively flat line in this figure shows DAF donors as

[10]The report refers to 2013 balances. Three elements of the report were summed: Total assets at financial institutions, Other interest earning assets, and Stocks and mutual fund shares. Left off were things like equity in a business, automobile, home, other real estate, and preferred retirement savings accounts. Also not counted were annuities, trusts, and life insurance.

Table 1: The Size and Scope of Donor Advised Funds from 2007 to 2015, in 1000's of Nominal US dollars

	2007	2008	2009	2010	2011	2012	2013	2014
Average per DAF (Thousands)								
Year-End Balance	203.2	187.0	160.4	182.2	198.4	218.0	257.2	290.0
Annual Contributions to	61.3	53.2	37.3	50.7	53.9	68.1	77.3	82.4
Annual Grants from	39.1	39.8	36.7	39.3	42.3	41.6	44.4	51.2
Average per IRS Return with Taxable Charitable Deduction:								
Charitable Deduction	5.0	4.6	4.5	4.6	4.8	5.6	5.1	6.1
All DAF Contributions and Grants as a percent of total IRS Contributions:								
Contributions to DAFs	5.11%	5.45%	4.41%	6.14%	6.45%	7.48%	9.46%	10.03%
Grants from DAFs	3.26%	4.08%	4.34%	4.75%	5.06%	4.57%	5.44%	6.23%
Accelerated Deductions	1.85%	1.38%	0.07%	1.39%	1.39%	2.92%	4.02%	3.79%

Sources: National Philanthropic Trust, *Donor Advised Fund Report*, 2011-2016; IRS Statistic of Income, Table 2.1, 2007-2014; and author's calculations.

a percent of all those tax filers who claim a charitable deduction. This number has stayed below 1% for the entire sample period. In 2014, DAF donors made up 0.74% of all those claiming a contributions deduction, yet were responsible for 10.02% of all charitable deductions. Moreover, these same people have already received tax deductions for another $269 billion that is yet to be productively employed in the charitable sector.

2.4 Why are DAFs Predominantly used by the Super Rich?

A quick look at the tax incentives to giving can indicate why DAFs are so much more popular among extremely high income individuals. Table 2 shows the marginal income tax rates and capital gains tax rates for incomes bracket stated in terms of 2013 incomes, which is near the center of those years reported on below. Saving capital gains taxation, as has been shown, is perhaps the main financial reason for using a DAF. Those who have no capital gains to give, whose financial assets are tied up in IRAs or 401(k) savings, or who simply have AGI too low to owe any capital gains taxes will have no use for a DAF.

According to Table 2, a married couple would need over $72,500 in AGI to save taxes by giving through a DAF, and that's only true if they have capital-gains assets to donate. The median household income in 2013 was $52,250 and the households with incomes up to $80,000 have little or no financial assets. This means there is no opportunity to benefit financially from DAFs for well over half of US taxpaying population.

The picture is complicated further when considering the fees and minimum deposit re-

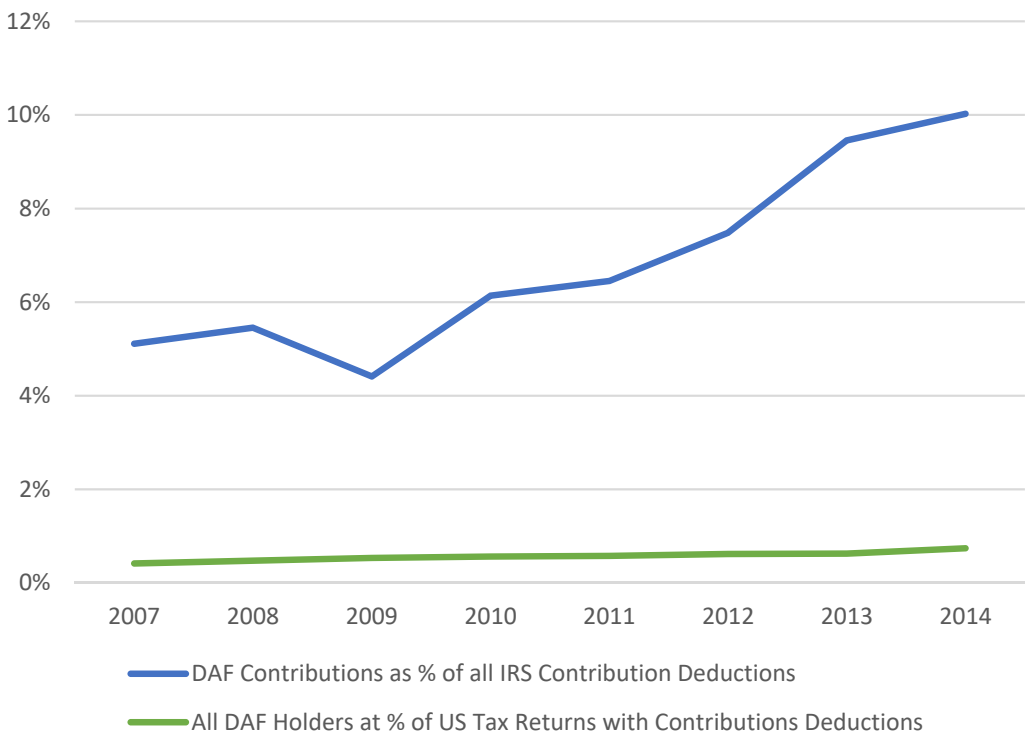


Figure 3: DAF Account Holders are Taking a Bigger Share of Charitable Deduction Dollars. (Sources: National Philanthropic Trust, *Donor Advised Fund Report*, 2011-16; and IRS Statistics of Income reports in individual income tax returns)

quirements for DAFs. One can open a DAF at Fidelity Charitable for a minimum initial deposit of $5000, which will carry annual fees of about $126. If this minimum deposit represents about 5 years of giving, as it would for a household with income of $80,000 per year, then the fees can reduce her giving by over 11%. By contrast, a person opening a DAF with $500,000 which they grant out over five years will pay total fees of about 3.1%. This again is greater discouragement to middle income households.

Finally, suppose two families both give the same asset to charity. The asset has a 50% capital gain. A household with AGI of $120,000 who gives $1000 will save $355, while the household with a $450,000 AGI or above will save $510 with the same gift, a difference of $190. Thus, among even those who could possibly afford a DAF, the incentives to both give and use the DAF are much greater the richer people are.

Now that we know what DAFs are and have a picture of who uses them, we next ask why and how they use them. Recall the two defining feature of DAFs: Timing and Convenience. We will explore how both of these affect those using DAFs.

Table 2: Federal Margin Income Tax Rate (MTR), Long Term Capital Gains (LTCG) and Net Investment Income Tax (NIIT) Rates, 2007-2015. Rates apply if taxable income exceeds $250,000 for married couples and includes net investment income, such as realized capital gains or passive business income.

Example of corresponding AGI brackets for 2013. For other years these are adjusted for inflation.*			MTR		LTCG				
			2007 -2012	2013 on	2007 -2011	2012	2013- LTCG	2013- NIIT	2013- Total
0	to	17,845	10%	10%	5%	0%	0%	0%	0%
17,845	to	72,500	15%	15%	5%	0%	0%	0%	0%
72,500	to	146,400	25%	25%	15%	15%	15%	0%	15%
146,400	to	223,050	28%	28%	15%	15%	15%	0%	15%
223,050	to	398,350	33%	33%	15%	15%	15%	3.8%**	18.8%
398,350	&	above	35%		15%	15%	15%	3.8%	18.8%
398,350	to	450,000		35%	15%	15%	15%	3.8%	18.8%
450,000	&	above		39.6%	50%	15%	20%	3.8%	23.8%

Source: IRS Tax Topic 409–Capital Gains and Losses, and Topic 559–Net Investment Income Tax

* This tax bracket is for Married Couples Filing Jointly. For single filers the NIIT trigger is at $200,000.

** Applies to incomes that exceed $250,000 within this bracket.

3 Uses and Abuses of Donor Advised Funds

This discussion is separated by the two main distinctions. Subsections 3.1 to 3.4 discuss the uses of the special rules of DAFs to alter either ones giving or finances in constructive ways. The final subsection, 3.5, looks at how DAFs can be used for the sole purpose of reducing one's tax bill.

3.1 Convenience: Giving Non-Cash Assets more Easily

We discussed earlier the advantage to giving appreciated assets rather than cash. Not only can taxable income be reduced by the value of the asset, but the gift also wipes away the tax on capital gains. For many small gifts, however, giving appreciated assets is not practical and only cash gifts can be accepted. DAFs offer an easy way to make small donations from capital gains assets by converting the asset to cash inside the DAF. Most DAFs allow gifts as small as $50.

3.1.1 What and When to Contribute to a DAF?

Here we consider a taxpayer who only uses a DAF for convenience. For such a "convenience contributor" the DAF is only a vehicle for converting assets with capital gains into cash in

order to give to charity.

Our convenience contributor faces a series of decisions. First is how much to give in the current tax year. After that, she must decide when to give it. Finally and most importantly for DAF tax policy—and the focus of this sub-section—is deciding when to fund the DAF and with which stocks from her portfolio.

Since the final question is the most straightforward, we start there. In most cases she should give the stock she owns with the highest fraction of capital gains.[11] This will save the donor the most in capital gains tax. After the DAF contribution she can adjust her investment and DAF portfolios to restore diversification.

When during the tax year should she fund the DAF? This will depend on several things. First, if she expects her portfolio to be growing in value, she will gain the most tax savings if she makes the contribution at the end of the year. Imagine she owns a share that is sure to go up by 10% in value. Funding the DAF with shares worth $1000 in January and granting them to charity in December means that the charity gets $1100 and she gets a deduction of $1000. Had she waited until December to fund the DAF at $1100, then everything would be the same, but now she can claim an extra $100 tax deduction.

By the same logic, if she feels confident that the stock she wants to donate will go down in value, then she should fund the DAF today rather than wait.

According to standard economic theory, however, we should expect that no one should be able to predict with any confidence that the stock market as a whole will rise by more or less than its usual long run rate of return in any year. Since this is around 7% per year, the best guess during normal times is that the fraction of capital gains among any investor's assets will most likely grow. For donors using DAFs for convenience, therefore, making and funding this year's donation as close to the end of the year as possible will allow for the most efficient giving.

This assumes, of course, that all the assets under consideration have no taxable distributions, such as dividends. While few securities have significant taxable earnings each year, some do. To make the argument clearly and simply, imagine an asset, Asset A, that only pays taxable dividends each year with no gain in value. Another asset B is identical to A except that it accumulates capital gains and pays no dividends (dividends and realized capital gains are taxed at the same rate). Of the two, contributing the asset with taxable dividends will be preferable since its taxes are due immediately. However, a superior way to give would be to mix the two. First, donate the dividends from A to the DAF, taking the full income tax deduction, and then supplement these with shares of B to reach giving goals

[11] The exception is when she might have realized capital losses, for which she may want to match with some realized gains so as to avoid carrying a loss forward.

and reduce exposure to capital gains tax. In this way, the asset paying dividends becomes almost the same as an asset with capital gains, and the tax consequences are virtually the same as well. If a stock has both capital gains and dividends, then giving both the shares and the dividends will have virtually the same affect on wealth as if the dividends were kept as retained earnings and experienced as capital gains to investors.[12]

3.2 Jagged Taxes and Smooth Giving

Many taxpayers, such as the self-employed, have highly variable income from year to year. As a result their marginal tax rates can also vary. These people would generally like their spending to fluctuate less than their incomes, and this includes their giving. Despite the desire for smoothing donations, it makes sense to claim more donations in years when their marginal tax rates are higher and claim smaller deductions when tax rates are lower. Without DAFs these people face a trade-off between smoothing and tax savings. DAFs eliminate the dilemma. They allow an individuals' contributions to DAFs to fluctuate along with incomes, while keeping their grants from DAF smooth across the years. This can maximize their tax savings while maintaining their connections to charity. In fact, we have already seen evidence of this use for DAFs. Flipping back to Figure 2, we see the line representing average annual contributions to DAFs taking a dip in 2009 in the midst of the Great Recession, while average grants from DAFs kept nearly constant from 2007 to 2012.

3.3 Pre-Paying

When people enter retirement, they often switch from drawing a nice salary to drawing down capital investments to finance their living expenses. As a result, they can find themselves in a lower tax bracket in retirement. People in this situation can gain by "pre-paying" their expected contributions in retirement before they retire. As we saw above, if they want to do this, the best time to do it is as late as one possibly can, thus bunching up as many years of pre-paid giving during their final years of work as possible. Facing maybe 10, 20 or even 30 years of annual giving in retirement means that waiting too long to begin pre-paying donations could put a person up against the contributions limit.

The IRS limits deductions to DAFs to 50% of adjusted gross income for gifts of cash but only up to 30% of AGI for gifts of non-cash assets. This means that giving the maximum for two or three years may be necessary to fully pre-pay one's donations.[13]

[12] If all the money contributed to a DAF in a given tax year is also paid out, as would be true for a convenience contributor, then the effect is the same. The difference would appear in any savings in the DAF and the forfeited tax deduction from assets growing in the DAF, offset by saved dividend tax.

[13] Imagine a person with AGI of $500,000 who gives away $20,000 each year, is planning to maintain this

3.3.1 Pre-pay or Carry Forward?

Another reason to pre-pay donations would be if a donor wishes to make a single large donation in one year. This is common in today's fund-raising world when charities are competing for donors by offering legacy gifts that will carry the donor's name, such a wing of a hospital, or a museum to house the donor's massive art collection.

Such large gifts will often surpass the IRS annual limit on the charitable deduction. Standard tax law allows the excess to be carried forward for up to five years. But this means delaying the full tax savings or, even worse, exceeding the deduction limits and failing to maximize tax savings. A DAF can solve all of these problems. By front-loading the DAF for several years before the big donation, the DAF will obtain the tax savings before rather than after the gift, and will reduce the need to carry forward excess deductions.

3.4 Forced Sales, Lumpy Assets, and other Large Capital Gains

Mergers, take-overs, initial public offers and other punctuated events often give shareholders an anticipated but unavoidable opportunity to realize very large capital gains without the hope of reducing these gains by matching them with realized losses.[14] A potentially attractive option is to give some of these shares to a DAF before the sale. Rather than face millions of dollars in capital gains tax, a person instead could fund a lifetime of charitable giving. Indeed, given our conversation on convenience use of DAF and delaying funding of DAFs, it is surprising to look at an annual giving report from Fidelity Charitable, for example, and learn that 8% percent of DAF accounts carry balances over $250,000. This can only be a smart investment if the donor had a single large and unavoidable gain.

Other assets can also bring large capital gains, such as non-publicly traded shares in closely held corporations, original artwork or collectibles, real estate, even homes.[15] While

level of giving for 25 years in retirement. Assuming a 7% annual return, then she needs a balance of $233,000 in her DAF upon retirement. Her deduction limit, however, is $150,000/year, which means she needs at least two years of savings to reach her goal.

[14]Many shareholder agreements allow for either votes from the board of directors or from shareholders themselves to force the sale of a fraction of shares from each shareholder at a fixed price. Typically this follows a bid for a merger or takeover of the company and can involve the purchase of up to 100% of the shares of the target firm. However, it is also typical that the forced sale price is a premium over the recent market price of the firms, thus all shareholders stand to make a gain from the sale.

[15]The IRS forgives tax on up to $500,000 in capital gains on homes for married couples, as long as the home is a primary residence. Gifts of artworks are also increasingly popular. For example, Audrey Irmas recently donated artwork by Cy Twombly to a Foundation carrying her name, but it could have just as easily been donated to a DAF. She originally paid $3.85 million for the painting, which was appraised before auction at Sotheby's for $70.5 million, giving her a deduction against income of $70.5 million and saving her tax on a long term gain of $66 million (or $13 million per year for five years). Had she allowed the painting to pass in her estate, she would have paid nearly $27 million in tax, or had she sold it as an individual she would have owed almost $16 million in capital gains tax (See "How do you tell the difference between

some donations of such large properties clearly end up with significant public benefit, others appear more motivated by tax considerations than civic-mindedness.[16]

3.5 Pure Tax Arbitrage

Tax arbitrage refers to a practice of shifting assets from one account to another without appreciably altering the portfolio of assets, but nonetheless producing a savings in taxes. Tax arbitrage is an issue with nearly every kind of tax, but is especially problematic with taxation of physical and financial assets. The rules around Donor Advised Funds are no exception.

3.5.1 Estate Giving

Since 2011, estates worth under $5 million have been exempt from estate taxes, a limit that is indexed for inflation (in 2017 the limit stands at $5.49 million). A donor who wants to include a gift in his estate, whether he will owe estate tax or not, can save money by giving the donation to a DAF before dying. Either way the gift will avoid estate taxes, but if is put in a DAF while alive, the donor can also collect a reduction in income taxes while alive, and advise the DAF to make the donation upon death.

3.5.2 Washing Out the Wash Rule

Suppose someone has realized a large capital gain and wants to avoid paying tax on it. A way to do this is to also realize an equal capital loss and use those losses to offset the gains for tax purposes. After liquidating the two shares to neutralize the gains, the person could simply buy both shares again and wash the taxable gain out of the portfolio.

This operation, however, is prohibited by the Federal Trade Commission under the "Wash Rule." This rule states that an investor who sells a share for a loss cannot go out and purchase the same or substantially similar shares again for at least one month. The point is to curb investors engaging in tax arbitrage. In this case, the sure profit comes in selling a stock with a capital loss to neutralize a capital gain, then buying one or both stocks back again and thus only reducing taxes without meaningfully changing one's portfolio.

philanthropy and a tax write-off?" by Jori Finkel, *New York Times*, November 4, 2015.)

[16]Ms Irmas' donation of the Twombly painting was sold within days of when it was officially donated, with the proceeds fulfilling several pledges she had made to charitable organizations. She, nonetheless, made the donation in the most tax advantaged way she could, and it is not clear whether she would have been more or less generous without the federal subsidy. For more socially questionable gifts, see the discussion of "private museums" that house a donor's art collection, but which are difficult to access by the public in the *New York Times* "Writing Off the Warhol Next Door: Art Collectors Gain Tax Benefits From Private Museums," by Patricia Cohen, Jan. 10, 2015, https://nyti.ms/1BZKYMf .

DAFs can help wash away capital gains tax as well, but in a way that does not violate the wash rule. Imagine a person who every year gives $10,000 in cash to charity. Suppose this year he decides to open a DAF. Rather than giving cash as he had planned, he opens his DAF with a deposit of $10,000 of shares with the highest capital gain in his portfolio. He then takes the cash and buys back the same shares. Inside the DAF, he sells the shares and makes the donations. But notice, after he contributed the shares they are technically the property of the issuer of the DAF, so legally he only recommended its owner liquidate the shares and make the donations. In every respect but this technical one, therefore, DAFs make wash sales convenient, easy, and legal.

3.5.3 Appraisals of Hard-to-Value Assets

Gifts of non-cash assets that are not publicly traded require the donor to get an appraisal. Only if claiming a "fair market value" of more than $500,000 does the donor need a "qualified appraisal" of the asset, meaning a licensed or certified appraiser has given an opinion as to the asset's fair market value.

There is a long history of difficulty with gifts of assets, as they invite abuse. Any appraisal, including the appraisal of DAFs conducted here, has a lot of room for discretion. However, as we know from the housing bubble, when the interests of the appraisers and those paying for an appraisal are aligned, it can lead to a market where the appraisers who tend to provide higher appraisals are in greater demand, and competition leads to inflation of appraisals.

The IRS has uncovered numerous cases of overblown appraisals, and there is no reason to expect that DAFs will suffer any less than other charities when it comes to gifts of appreciated assets.

4 Benefits and Costs: Conceptual Issues

Benefit-cost analysis requires that we look at the world from a distance, not putting our thumb in the scale for any particular outcome. When we can we draw our assumptions from neutral sources or objective data. When we have discretion we also conduct calculations from options that we think are either too low or too high so as to put bounds on any unintended bias that may be in our analysis.

Before we can compare benefits and costs, we must agree on what we will count among each. We do this next.

4.1 What is a Benefit of Donor Advised Funds?

The obvious objective of DAFs is to encourage people to give more to charity. Indeed surveys done by Fidelity Charitable of their DAF clients suggest that people are increasingly likely to think of DAFs as a means for giving more to charity, with 73% saying that their tax savings allow them to give more to charity. These additional contributions comprise the benefits of the DAF program.

Givers report other benefits, such as the convenience of using a DAF to order payments to charities and for budget purposes. Most of these same services can be provided by one's own bank, however, as well as from many brokerage houses. Thus, the service of simply going online to send payments to charities is actually not, on net, a benefit as it largely reproduces services already available without DAFs.

The unique service DAFs do provide is, first, ease in allowing for appreciated stock to be used for donations of all sizes, and second, the ability to save contributions made today to fund donations in the future. Thus the benefit to DAFs is the *additional* charitable giving that is received because of the DAF.

We can illustrate with three extreme examples.

Example 1: Imagine a person frames their giving decisions this way: Before discovering DAFs, this family had decided to give $20,000 per year to charity and will do so at the least tax cost possible. DAFs helped them discover new ways to save tax payments, but they did not revise their giving plan. Here we would say the DAF program got no benefits from this household. The simply kept with the same giving plan, and were not induced to give more.

Example 2: This family has separated their assets into two accounts. One account will determine what they spend on themselves, and the other account will go to charity. Any tax savings from DAFs go right back into the charitable account. Thus, each year the present value of the benefits of DAFs exactly equals the tax savings of the gift.

Example 3: Because of a sale of a company, the family earned a $2 million capital gain this year. They decided to set it aside so that they could save up for a $4 million dollar gift to their Alma mater to fund a new biology lab, which they expect to have achieved in 5 years. However, when they learned about DAFs, they gave their business interest to a DAF before the shares were sold, saving them $476,000 in capital gains tax while reducing their state and federal income taxes by $992,000. So a year later they find themselves with about $1.5 million more than they expected, meaning they have about 3.5 of the $4 million goal and can make the gift in two years rather than five. This earlier receipt of the gift is a clear benefit of the DAF.

Example 4: Suppose the family in the prior example learned that there was actually an opportunity to give a $5 million endowment to an economics lab at their alma mater that would support behavioral economics (the future of dismal science). Because the DAF allowed them to save so much on the sale of their business, they decide to pay about an extra $300,000 net of taxes to fund the $5 million lab on the original schedule. Thus, the charity now gets money at the same time, but because of the DAF gets $1 million extra. This $1 million extra is the benefit of DAFs.

In sum, DAFs can have no benefits if all the taxpayer does is shift assets in order to save taxes and gives no more to charity.

The DAF can have benefits if *i*) donors give more money on the dates they planned, *ii*) give what they planned but give it sooner, *iii*) give more in present value terms than they had planned, or *iv*) any combination of the above.[17]

4.2 What are the Costs of Donor Advised Funds?

Notice that in the prior subsection, I did not list the reduction in taxes as a benefit of DAFs. Recall that in this analysis we are not to take the position of the donor but of a citizen at large in society. A tax policy generates $\$X$ of new giving to charity while paying out $\$Y$ in tax breaks is surely better than a policy that gets the same $\$X$ in charity but pays out $\$Y \times 2$. Thus, the more taxes people save under the new program, the greater the cost.

The next source of cost is a bit more subtle, but very important. If a person puts $1000 in a DAF and doesn't give it out for a year, the money in the DAF will grow at a rate r. Suppose $r = 0.07$, the long run rate of return in the stock market. So money in the DAF could be thought of as having a return on investment, or ROI, of 7% per year. But charitable giving also has features of an investment. Consider some examples.

Example 1. Economist James Heckman has estimated that money spent on early childhood development programs for poor households has a social rate of return of return of 10%. He notes that other similar programs have measured returns as high as 17%.[18]

Example 2. Donating $15 to the Nature Conservancy can fund an offset for 1 metric ton of carbon. The Environmental Protection Agency estimates that this saves the economy about $62 in present value of the costs of pollution.[19] This implies an annual return on investment of almost 11%.

[17]This assumes, of course, stable tax rates over the relevant period.

[18]See "Investment in early childhood development: Reduce deficits, strengthen the economy," posted on The Heckman Equation, www.heckmanequation.org

[19]See https://www3.epa.gov/climatechange/EPAactivities/economics/scc.html for EPA estimates.

Example 3. GiveDirectly is a charitable organization that is changing the way we help poor people around the world. They use donors' gifts to provide unconditional cash grants to poor African families. The charity was founded by economists so, naturally, they commissioned an independent, fully randomized, and rigorous evaluation of the return on investment of these grants. What they found surprised many. People used the money to invest in things that give long run returns—a new roof, a scooter to drive to work in the city, or a dowry for a wife. They found a return on investment over 30%.[20]

Example 4. Often gifts to charities can have greater returns the more people give to them. Vaccines are an excellent example. Vaccinating only one person will not stop an epidemic. But, depending on how quickly a virus can spread, vaccinating between 85 to 90% of the population (called the herd immunity threshold), can spare virtually the whole society. So the return on investment to the first vaccine is nearly zero, but the return on investment of the final vaccine that crosses the heard immunity threshold is, well, priceless.

The point of these examples is to show that giving to charity has a return on investment as well. While not all charities are high performing, those that tend to survive in the competition for donations are more likely to generate an ROI that exceeds that of the average for-profit investment. So to be as fair to possible to charities, we should count the value of donations as worth more than the same money in an investment account. [21]

To summarize, DAFs will have costs if they reduce the revenues of the Treasury. They will also have costs if they encourage people to delay their giving beyond what would have done had there been no DAFs.

4.3 Combining Benefits and Costs

If DAF policy is to be successful, it must encourage more in new donations than it costs in new amounts of lost tax revenue. Behaviorally, there are three basic types of changes that can affect costs and benefits.

First is *convenience givers*. These giver can change the proportion of donations they fund with appreciated assets. This affects the amount of capital gains tax they avoid on the capital gains assets they move into their DAF.

Second is *DAF savers*. These are the people who smooth giving, or pre-pay before retirement. Or it could be people who get large capital gains in one year and use the DAF to fund years of regular giving. All of these increase the time between when contributions claim a tax reduction and when the money is put to work by the charity. To see this point clearly,

[20] See Haushofer and Shapiro (2016).

[21] See Andreoni (1998) for a discussion of increasing returns and the market for charitable giving. See also Andreoni (2006) and Andreoni and Payne (2013) for reviews of the literature on charitable giving.

imagine that the DAF policy creates $100 more in new charity but only $90 more in lost tax revenue. If timing doesn't change, then the policy is a net benefit: $100 - 90 = 10 > 0$. But suppose it delays the giving by a year. With a discount rate of 7%, the margin between benefits and costs shrinks: $PV(1) = -90 + 100/(1.07) = 3.46$. If the delay is two years, the inequality flips and the policy becomes a loss: $PV(2) = -90 + 100/(1.07)^2 = -2.65 < 0$. Interestingly, we draw the same conclusions if instead the policy moves up the tax savings by a year or two. The future value of the policy after moving up tax savings a year is $FV(1) = -90(1.07) + 100 = (1.07)(-90 + 100/(1.07)) = 1.07PV(1)$. Likewise, hastening deductions by two years has a future value of $FV(2) = -90(1.07)^2 + 100 = 1.07^2(-90 + 100/(1.07^2)) = 1.07^2 PV(2)$. So, whether benefits are delayed or costs are hastened, what matters for benefit cost analysis will just be the difference between the two.

Third is people who see DAFs as lowering the price of doing good and use the opportunity to increase their giving. Next we turn to the data to try to get a sense of the magnitudes of these three.

5 DAF Benefit Cost Analysis

Here we document how we calculate or determine all of the variables we need to conduct our analysis. In doing so, there is one essential thing that must be kept in mind. We need to conduct our analysis for the *average* person. The most transparent way to do this is to look at our aggregate data as if it were generated by a single person with a single DAF account, a single representative income tax rate, and a single representative capital gains tax rate. This person makes the average donation and waits the average amount of time to start granting it out to charity, and grants it all out to charity at the average rate.

On the road to doing this, we need to establish some facts and inform some needed assumptions. After describing our data, we catalog these below.

5.1 The DAF Data

We obtained our primary data from the Chronicle of Philanthropy, who provided us with a list of over 80 DAF providers from 2009 to 2014. This data lists the number of DAF funds under management, annual contribution to DAFs, grants from DAFs, and total year-end balance in all accounts. For each DAF provider the data is in aggregate and is drawn directly from individual 990 forms.[22]

[22]IRS 990 forms are the tax returns that 501(c)(3) charities must file annually with the IRS, including issuers of DAFs.

Table 3: Means for 13 organizations whose sole mission is to provide Donor Advised Funds.

	Mean Values							
	2008	2009	2010	2011	2012	2013	2014	2015
Grants From DAFs($mil)	181.5	205.8	218.5	235.1	289.9	369.1	475.7	536.2
Contributions to DAFs	209.0	261.6	322.1	456.6	640.0	664.8	874.7	812.6
Non-Cash Contributions	85.7	156.8	177.4	299.0	344.5	443.1	533.0	518.4
Publicly Traded Securities	80.2	152.6	167.5	285.1	309.0	258.0	371.7	198.8
Other Non-Cash	1.5	4.3	9.9	13.9	27.5	45.5	17.3	47.3
Cash Contributions	123.3	104.8	144.7	157.6	295.5	221.	341.7	294.1
End-of-Year Assets	739.4	851.3	1084.1	1305.8	1800.9	2326.0	2769.6	3032.9
(Lagged as Beginning-Year-Assets, BYA)								
Average Account Size	0.263	0.249	0.267	0.270	0.303	0.334	0.381	0.359
Number of Accounts	6280	6478	6777	7195	8154	9201	10752	12606
Contributions/BYA		0.299	0.387	0.355	0.465	0.376	0.482	0.358
NonCash/BYA		0.149	0.204	0.191	0.252	0.233	0.277	0.198

The National Philanthropic Trust conveniently has the very same data, and has published the aggregates for years to 2007-2015. We also have specific information from Fidelity Charitable via publicly available reports and donor/investor guides. They also publish the results of periodic surveys of their account holders, both in Fidelity Investments and Fidelity Charitable, which have been very informative.

Some of our analysis will be concerned with a precise value for contributions of non-cash assets. Unfortunately, we discovered that community foundations collect contributions for DAFs and for the community foundation directly, and do not treat gifts of non-cash assets consistently across community foundations. For this reason, much of the analysis focuses on a subset of DAF-only organizations, such as Fidelity Charitable, Vanguard Charitable, and the like. We augmented this to include information from the 2015 IRS form 990 filings of each organization. Of the 15 such organizations, we found sound financial statements from 2008-2015 for 13 of them.[23] The means of relevant variables are reported in Table 3. While this represents a large reduction in the number of organizations, going from 85 to 13, these 13 organizations nonetheless represent nearly 60% of the total value of all organizations provided in the Chronicle of Philanthropy data.

A further source of information is the US Treasury's annual tables that summarize the tax returns of citizens. Line items are aggregated across returns and reported by category of Adjusted Gross Income, as well as total income. This information is very helpful in constructing our much needed counter-factual—what do people do generally, without the benefits of DAFs?

[23]Due to inconsistencies in financial statements that we could not reconcile, we dropped Goldman Charitable Gift Fund and Greater Horizons.

5.2 Shifting to more Appreciated Assets

Both the convenience and savings features of DAFs encourage using non-cash assets to fund giving. Fidelity Charitable reports that anywhere from 60-75 percent of money used to fund DAFs are non-cash. The Chronicle data supports this finding more generally. On average, DAFs tend to receive about 65% of funds from appreciated property.

The Statistics of Income data tells another story. Even for the wealthier filers, the best estimate is that about 50% of donations are non-cash in the general population. So the first assumption we will make is that DAFs shift more giving to appreciated assets:

Assumption 1: *The behavioral consequence of DAFs is to shift giving from 50% non-cash assets to 65%.*

5.3 Fraction of Asset Value that is Capital Gains

While we have measures for contributions of non-cash assets to DAFs, there are no data to tell us the tax basis of those assets. We do, however, have have some pieces of information that will help us. First Fidelity's surveys of DAF holders reveals that the typical person to open their first giving account when in his or her mid to late 50's, and the median age of all DAF account holders is about retirement age of mid sixties. This means these people have had many years to invest. This means we need to ask What kind of capital gains does someone who chooses to use a DAF have on average?

Table 4 gives some samples of assets that could be in a donor's portfolio. Note, we don't need to ask about *everything* in their portfolio, but only about the assets with the *largest* share of capital gains. This table imagines a person who is ready to open a DAF in 2017 at age 60. He's been investing for 30 years. If he held an S&P 500 index fund since his 30th birthday, today it would be 88% capital gains. If at age 40, in 1997, he could afford to buy into Berkshire Hathaway, today those shares would be 86% capital gains. Were he more daring and stuck with Apple stock when he was 45 in 2002, it would be 98% capital gains today, and if he purchased Apple, Amazon, or Facebook even 10 years ago, he would have shares with 81 to 96% capital gains in his portfolio. So, hunting for the best performing shares indicates they could be quite a source of arbitrage for a DAF.

A second resource is a survey that Fidelity conducted of its investments customers. Looking at their accounts, Fidelity could tell what shares they have that could most benefit the client as sources for a DAF contributions for tax savings. They then ranked these savings and reported the potential savings by decile—the largest 10% of potential gainers to the lowest 10%. Fidelity goes on to report two numbers that are quite interesting. First, they confess that only 30% of potential DAF account holders have ever even heard of DAFs. Second, of

Table 4: Percent of Stock Price that is Capital Gains when Purchased at Dates from 1987 to 2007, for an S&P 500 index fund, Apple Computers (AAPL), Berkshhire Hathaway B (BRK-B), Amazon.com (AMZN), and Facebook (FB).

Year	Year	Capital Gains as a Percent of Price				
Purchased	in DAF	S&P 500	AAPL	BRK-B	AMZN**	FB**
1987	2017	88.85%	99.34%	98.79%		
1997	2017	68.03%	99.60%	86.41%	99.85%	
2002	2017	54.04%	98.81%	71.14%	98.27%	
2007	2017	41.51%	91.78%	57.02%	96.24%	80.74%

* Purchase Dates Assumed January 2, except AMZN, contribution date to DAF assumed to be July 15. 2017.

** Amazon IPO was July of 1997, and 1997 and purchase date is July 15.

*** Facebook purchase January 1,2013, six months after IPO.

all potential clients, only 3% in 2007 actually held DAFs.

So of all the potential DAF holders that Fidelity identified, which of the deciles will the elite 3% likely come from? One natural assumption is that those most likely to benefit from DAFs are the most likely to hear about them and adopt them. So let's focus on the top three deciles. These groups have assets with 85%, 62%, and 47% capital gains respectively. An extreme assumption is that all DAF adopters come from the top decile, giving us a high estimate. A more reasonable assumption is that they come equally from the first and second decile. The average of those two is 73% capital gains. Finally, a conservative decision is that they come equally from the top three deciles, which averages 64% capital gains. Rounding these three we then adopt our next assumption:

Assumption 2: *We will assume assets contributed to DAFs comprise one of three fractions of capital gains: a low value of 65%, a medium value of 75% and a high value of 85%. Our preferred value, however, is the medium value of 75%.*

5.4 The Rate of Return on Assets Invested in DAFs

Let A_t be the assets held by a DAF at the end of year t. Contributions to and Grants from the DAF to charity in period t are written C_t and G_t. Since we do not know when the flows come in and out of DAFs, it would be appropriate to weight C_t and G_t to reflect possibly different timing of flows into and out of the DAF over the course of the year.

To reflect this, write the internal rate of return on DAFs to be

$$A_t = (1+r)A_{t-1} - (1+r\phi_G)G_t + (1+r\phi_C)C_t \tag{1}$$

where ϕ_G and ϕ_C adjust the returns on G_t and C_t to reflect that they are not in the account

the full year.

Since we don't know the timing of contributions and grants over the year, our analysis will make the simplifying assumption that they all take place at the end of the year. Since we do this both with contributions arrive and when grants depart the account, this should create little or no systematic bias, but it does allow us to easily calculate how end of year grow each year. Since A_t includes both contributions and grants, we reverse them, again assuming the transpire at the end of the month:

$$A_t + G_t - C_t - A_{t-1} = rA_{t-1} - r\phi_G G_t + r\phi_C C_t \tag{2}$$

Dividing both sides by A_{t-1} we get:

$$\frac{A_t + G_t - C_t - A_{t-1}}{A_{t-1}} = r\frac{A_{t-1} - \phi_G G_t + \phi_C C_t}{A_{t-1}} \equiv \hat{r}$$

where we define $\hat{r}$ as the effective rate of return. For each year, we can construct $\hat{r}$ and apply this to all assets in the DAF that year.

Table 5: Rate of Return on Assets in DAF

	Billions of US Dollars				Implied Return, $\hat{r}$		
	End of Year Assets	Contrib's	Grants	Gains	mean	Weighted by Assets	last half
2008	9.712	2.733	2.383				
2009	11.479	3.818	2.785	0.734	0.076	0.005	
2010	14.568	4.459	3.061	1.690	0.147	0.012	
2011	17.372	6.010	3.209	0.003	0.000	0.000	
2012	23.831	8.486	3.924	1.897	0.109	0.015	0.109
2013	30.639	8.784	4.973	2.997	0.126	0.022	0.126
2014	36.419	11.531	6.326	0.575	0.019	0.004	0.019
2015	39.341	10.790	7.221	−0.647	−0.018	−0.004	−0.018
Average	24.807	7.697	4.500		0.066 high	0.054 low	0.059 medium

Table 5 reports the calculations derived above. In the final three columns are separate calculations. The first is a ordinary mean across the values of $\hat{r}$ estimated for each year in our sample. This gives an average return of $\hat{r} = 0.066$. Weighting the returns by assets, we get $\hat{r} = 0.054$. Finally, avoiding the unusual years surrounding the 2008 financial crisis, the last column give an estimate of $\hat{r} = 0.059$. For our results here we will use the middle of the three, but will also report the results of the high and low values in the appendix. As can be seen, the tenor or the results is the same.

Assumption 3: *Assets retained in a DAF account will increase in value by 5.9% annually*

5.5 Finding the Shelf-life of a DAF Contribution.

In their annual giving reports, Fidelity boasts that over 95% of of individual deposits into DAF accounts are fully paid out within 10 years. To those who favor requiring minimum spending rules for DAFs balances, this statistic is not one to be bragging about. While not unimportant, individual accounts may be the wrong place to focus when determining benefits and costs of DAFs as tax policy.

We instead should think of all DAF accounts together as if they comprised a single person's *inventory* of donations. The way an accountant would measure the cost of goods sold is to use a FIFO inventory method: First-In-First-Out. When a firm puts an item into inventory today, it must first sell all other items currently in inventory *before* the item they just put into inventory is considered sold. Envision this application to DAFs: This year's contributions to DAFs go into an investment account named "2017." It sits alongside other accounts named "2016," "2015," and so on. Each investment account holds different numbers of shares of the same mutual fund. At the end of each year, all grants to charity are paid by starting at the oldest account. If we draw that account to a 0 balance, we close that account and move to the oldest remaining account, and so on. Perhaps years later, we will start to dip into the 2017 account, now hopefully larger due to investment returns. Eventually, after a bit more than a year of grant making, the 2017 account will be closed.

Continuing with this analogy, we need to find these pieces of information: For the account we open this year with our 2017 contribution, at what year do we begin making grants from this account? How many grant dollars go out of the account each year? When is the account closed? And what is the 2017 present value of the donations from this account?

We show the answer to these questions graphically in Figure 4. This figure uses the data from our 13 DAF-only organizations. The red line indicates all the money in DAF accounts that is owed to charity. Each year this grows for two reasons. First are the new contributions to DAFs, and second are the investment returns earned on the DAF holdings. We begin at the year end of 2008. The height of the red line at 2008 is the year-end balance for 2008. This is the total amount of money (plus investment returns) that needs to be given away before any contributions from 2009 will be eligible to be given away. We isolate this money from any new donations, and affix to it a growth rate as described in the prior subsection. This means that as we move out to 2009, 2010 and so on, the light blue line that starts in 2008 tells us how much money needs to be granted out of DAFs before all the money on hand at the end of 2008, including any earnings, is fully paid out. The black line keeps track

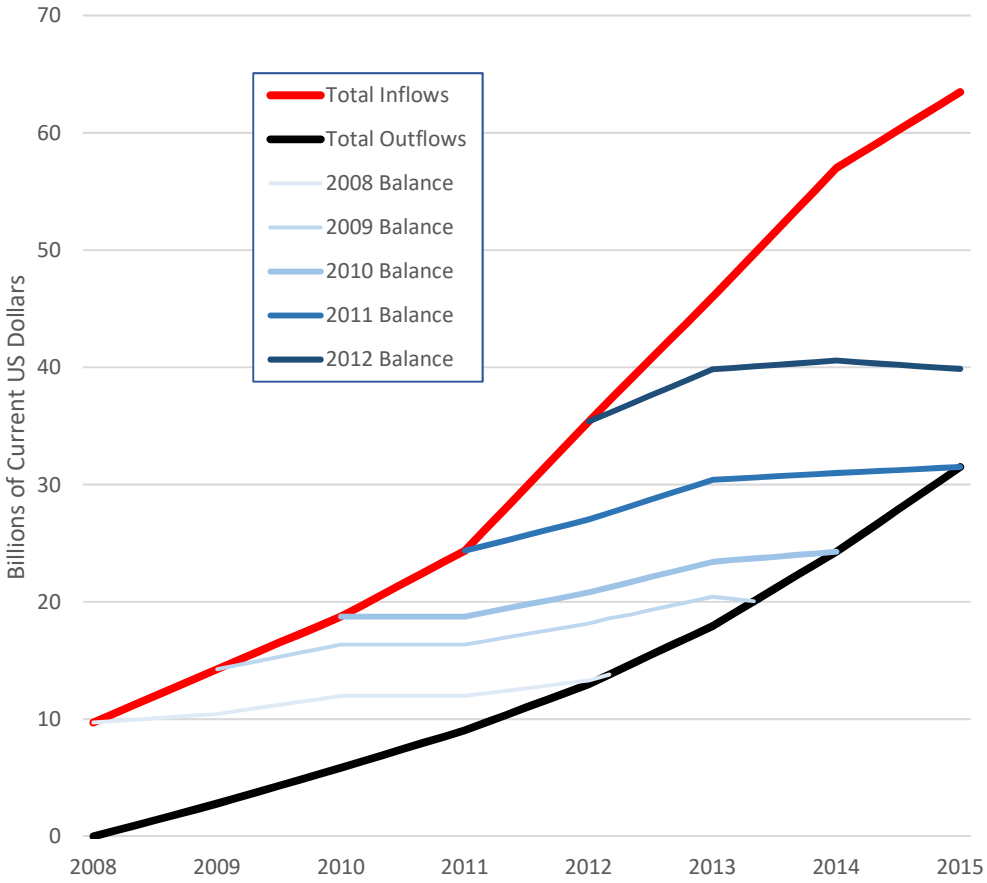


Figure 4: Inventory of DAF Dollars paid out on a FIFO basis. Inventory of DAF Dollars paid out on a FIFO basis. When a Blue line goes from the Red Line (total contributions to DAFs) to the Black Line (total grants from DAFs) that year's contributions are fully out of the inventory of DAF funds.

of the total money granted out as donations. Thus, when the blue line from 2008 touches the black line, all of 2008 is "off the shelf," and we can begin spending the 2009 contributions. Our eye can then turn to the slightly darker blue line originating in 2009. When this line hits the black line, then 2009 money is fully spent, and we can go on to 2010 contributions and so on.

We can see from the figure, it takes about 4 years for the new additions to the DAF inventory to fully make it out to charities.[24] Table 6 shows the start and end dates we are able to calculate and the fraction of the year's grant using the initial contribution. We do this first for the aggregate of the DAF-only organizations, for Fidelity Charitable, and for a fictitious DAF that grows as specified in Table 5, the first column under $\hat{r}$. As can be seen, all three have very similar results. As panel (c) smooths out yearly fluctuations in returns,

[24]In the appendix we provide similar figures for Fidelity Charitable, as well as for an asset that grows as implied by equation (1) of Table 5. Both are quite similar to Figure 4.

Table 6: FIFO inventory accounting for contribution to DAFs and eventual granting from DAFs. For all DAF organizations, Fidelity, and simulated returns, all DAFs begin spending contributions three years after the contribution, and complete granting in the fourth year.

		2009	2010	2011	Average
a. All DAFs					
Year 0	Contributions	3.818	4.459	6.010	4.762
Year 3	Grants	1.130	0.360	1.020	0.837
Year 4	Grants	4.613	5.306	6.511	5.476
PV of grants	3% discount	5.132	5.044	6.718	5.631
PV of grants	7% discount	3.765	4.342	5.800	4.636
b. Fidelity					
Year 0	Contributions	1.321	1.735	3.281	2.113
Year 3	Grants	0.700	0.900	1.170	0.923
Year 4	Grants	1.310	1.672	2.976	1.986
PV of grants	3% discount	1.804	2.309	3.715	2.609
PV of grants	7% discount	1.069	1.364	2.430	1.621
*c. Simulated**					
Year 0	Contributions	3.818	4.459	6.010	4.762
Year 3	Grants	1.969	2.329	3.269	2.522
Year 4	Grants	2.644	3.057	3.572	3.091
PV of grants	3% discount	4.221	4.929	6.260	5.137
PV of grants	7% discount	3.765	3.057	5.584	4.582
Year 3 grants as a percent of initial contribution					
All		30%	8%	17%	18%
Fidelity		53%	52%	36%	47%
Simulated		52%	52%	54%	53%

but is still representative of the other two panels we will adopt the following assumption about the shelf-life of DAF contributions.

Assumption 4: *Any contribution to a DAF will begin coming out of inventory in the third and fourth years. In the third year after the contribution, 50% of the contributed amount will be paid as a grant, with the balance paid in the fourth year.*

6 The Benefit-Cost Calculation

We now have all of the pieces in place to ask how easily a DAF might meet benefit-cost standards for tax policy. The calculations are shown in Table 7.

Panel (a) of the table recreates the assumptions reached in the analysis above. For convenience we imagine a contribution of \$1000 to a DAF in year 0. The contribution is made with 65% capital-gains assets and 35% cash. The contribution earns a return of 5.9% annually, and is paid out in years 3 (50% of its initial contribution) and year 4 (the full remaining balance). We assume our DAF account holder faces the maximum income and capital gains tax rates in place in August of 2017. We can then calculate the present value back to year 0 of both the grants to charity and the tax savings to the donor. The value of this charity to society is the present value of the donation less the present value of the tax cost. To get its true value for policy evaluation, however, we have to compare it to what might have happened had there been no DAFs.

This all important question of how DAFs affect behavior is the one thing, however, we cannot answer. We will, therefore, take two approaches to framing the boundaries between a "surely a beneficial tax policy" and "surely not a beneficial tax policy."

On the pessimistic side, we have Scenario 1. Here we assume that the only behavioral effect of DAFs is to give exactly as one would without a DAF, but at greater tax savings. That is, DAFs create no new charity and are solely a vehicle for pure tax arbitrage. This means DAF and no-DAF giving will be identical with identical present value of grants. But the gifts made in the scenario with no DAFs would get the tax benefit in the same year the donations are made. And since DAFs encourage more giving of appreciated assets, the tax savings will be smaller in the No-DAF world. Both of these will boost the net impact of gifts without DAFs and work against the DAF policy. Thus, regardless of the discount rate or the fraction of capital gains in an asset, the No-DAF world will always win this comparison.

This exercise is important to examine, despite the obvious conclusion, because we can calibrate just how deep a hole DAFs have to dig out of before they come to dominate a no-DAF policy. As Table 7 shows, DAFs produce about 2% to 12% less net value than the No-DAF policy.

Next we turn to Scenario 2. In this world DAFs encourage enough new charity that they more than make up for the greater cost they exact on the Treasury. In this best case scenario we calculate the fraction of DAF contributions that represent the threshold level of new giving—money that would not have gone to charity without DAFs—that allow policy makers to embrace DAFs as a valuable policy tool. For example, with a 3% consumption discount rate, and 75% capital gains, 7.1% of DAF donations need to be new donations.

Table 7: Benefit-Cost Assumptions and Analysis, assuming an annual effective annual growth rate in DAFs of 5.9%. Parameters were chosen on the basis of prior analysis. The pessimistic assumption is that DAFs are only used to save taxes and do not increase giving. From this benchmark we can ask what fraction of donations from DAFs would need to be new donations in order to justify DAFs as sound public policy.

a. Assumptions

1. Pay 1000 into DAF at the end of year 0.
2. DAF Payout schedule will be as Specified in Table 6, panel c.
   a. Payout begins in year 3, granting out 50% of the initial Contributions.
   b. The remaining DAF balance is granted in year 4.
3. DAF assets will earn an annual return of 5.4% based on Table 5, Column 1.
4. DAF contributions are 65% non-cash assets, non-DAF donation are 50% non-cash.
5. A marginal income tax rate of 39.6% and long term capital gains tax rate of 23.8% applies to all charitable deductions.
6. Capital gains assets have either 65%, 75%, or 85% capital gains.
7. Discount rate of either 3% or 7% annually are used to calculate present value (PV).

b. Benefit-Cost Calculations

Discount Rate:	3%			7%		
Percent of Capital Gain to Value:	65%	75%	85%	65%	75%	85%
DAFS:						
PV of grants (A):	1042	1042	1042	911	911	911
PV of DAF tax savings (B)	497	512	527	497	512	527
Net Value of DAF ($C = A - B$)	545	530	514	414	399	383
Scenario 1 (Worst Case): Non-DAF Donations replicate DAF grants.						
PV of No-DAF Tax Savings (D):	475	475	475	415	415	415
Net Value of No-DAF ($E = A - D$:	567	567	567	496	496	496
GGain(+)/Loss(-) of DAF ($F = E - C$):	–22	–38	–53	–82	–97	–113
Percent gain/loss (F/A):	–2.1%	–3.6%	–5.1%	–9.0%	–10.7%	–12.4%
Scenario 2 (Best Case): DAFs create enough new charity to justify increased tax cost.						
Minimum new giving as percent of DAF grants to meet Benific-Cost test:	4.0%	7.1%	10.3%	19.7%	24.4%	29.4%

However, the same action with the financial discount rate of 7% requires 24.4% of DAF grants to be new grants. This is obviously a much more difficult bar to pass. In the appendix, Table 11 shows similar analysis for the higher implied return rate of $\hat{r} = 0.066$, and Table 10 shows the results with the lower implied rate of 5.5%. Both results very similar to the above.

How can we evaluate whether Scenario 1 or Scenario 2 is most likely to occur? In the next section we provide some suggestive evidence.

7 Tax Policy Changes over the Sample Period

Looking back to Table 2 we see that a tax change took effect in 2013 that had a significant impact on Donor Advised Funds. First, the top marginal income tax rate moved from 35% to 39.6%. Second, the top tax rate on long term capital gains went from 15% to 23.8%. The increase in income tax rates will have both an income and substitution effect. Because people are paying more tax, they feel they have less to give to charity. At the same time, since their marginal income tax rate went up, the price of giving went down, which will incentivize them to give more. With the capital gains tax hike, this should incentivize donors to choose DAFs as a means of minimizing the negative effects of the increased capital gains tax rate.

Since both changes took place in the same year, it will be impossible to separate the two effects. For this reason we run a simple regression of Contributions as a fraction of Beginning-of-Year Assets, written Contrib/BYA, and then separate this into non-cash and cash components. On the right hand side we include a set of variables called "$20xx$ and Later." This variable is equal to 1 in year $20xx$ and all years after. Thus, if 2013 has a permanent effect that persists forever after, then the coefficient on 2013 and Later should tell us the effect of the policy change.

As we can see from Table 8, 2013 and Later has a significant and negative effect on contributions and on gifts of cash, and a negative but insignificant effect on non-cash contributions. In the appendix we also present a similar regression where the dependent variable is Non-cash/Contributions, and the effect is positive and significant for the 2013 regressors. Importantly, none of the "and later" variables has a significant effect before 2013. And 2015 has a sizable negative effect on non-cash giving, for reasons not yet understood.

What this table tells us, however, is that taxes are indeed important to DAF donors. Unfortunately, the desire to avoid taxes seems to outweigh their desire to give more when giving becomes cheaper. That is, the increase in capital gains taxes shifts giving to include more capital gains assets, but lowers giving overall. This seems to suggest that the worst-case scenario is a more accurate description of the average DAF donor than the best case

Table 8: The effect of 2013 increases in top marginal income tax rate to 0.396 from 0.35, and top marginal capital gains tax to 0.238 from 0.15. Dependent Variables are Current year contribution (either cash and non-cash ir just non-cash) over beginning-of-year assets. Variables "x and Later" equal 1 in years x and later.

	(1) $\frac{\text{Contrib}}{\text{BYA}}$	(2) $\frac{\text{Contrib}}{\text{BYA}}$	(3) $\frac{\text{NonCash}}{\text{BYA}}$	(4) $\frac{\text{NonCash}}{\text{BYA}}$	(5) $\frac{\text{Cash}}{\text{BYA}}$	(6) $\frac{\text{Cash}}{\text{BYA}}$
Lagged Avg Account Size		191.2***		47.86		143.4***
		(42.19)		(49.14)		(28.78)
2010 and Later	0.0881	0.0907	0.0552	0.0558	0.0329	0.0349
	(0.0574)	(0.0608)	(0.0357)	(0.0364)	(0.0328)	(0.0351)
2011 and Later	-0.0326	-0.0360	-0.0127	-0.0135	-0.0199	-0.0224
	(0.0644)	(0.0656)	(0.0403)	(0.0408)	(0.0417)	(0.0431)
2012 and Later	0.110**	0.109**	0.0609	0.0608	0.0490	0.0486
	(0.0494)	(0.0498)	(0.0494)	(0.0495)	(0.0327)	(0.0335)
2013 and Later	-0.0885***	-0.0950***	-0.0190	-0.0206	-0.0695***	-0.0743***
	(0.0238)	(0.0248)	(0.0174)	(0.0184)	(0.0200)	(0.0201)
2014 and Later	0.106	0.100	0.0440*	0.0425	0.0619	0.0576
	(0.0669)	(0.0659)	(0.0240)	(0.0240)	(0.0536)	(0.0534)
2015	-0.124	-0.134	-0.0787**	-0.0810**	-0.0456	-0.0525
	(0.0735)	(0.0843)	(0.0313)	(0.0330)	(0.0590)	(0.0659)
Constant	0.299***	0.249***	0.149***	0.136***	0.150***	0.113***
	(0.0353)	(0.0435)	(0.0255)	(0.0314)	(0.0228)	(0.0279)
Observations	91	91	91	91	91	91
R^2	0.105	0.185	0.113	0.125	0.0482	0.165

Standard errors in parentheses

Notes: Standard Error is clustered at the organization level.

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

scenario. At the very least it casts extremely serious doubt that the benefits of DAFs could ever achieve increases in giving in the range of 20% or higher.

8 Conclusion

In this paper I have discussed tax policy toward charitable giving in general, and have described how this newly popular vehicle of Donor Advised Funds fits into this policy landscape. I have discussed how DAFs allow convenience to givers who would like to use capital-gains assets to make their everyday charitable gifts. And I have discussed how tax arbitrage is an enticing use of this donation innovation.

In examining the data we determined how much we can expect DAF accounts to earn,

and just how long DAF contributions remain in inventory before they are paid out. We showed that starting in their fourth year, they tend to be fully paid out in 5 years. This delay has a cost to the US taxpayer, since the cost is experienced immediately, while the gain only comes in 4 to 5 years.

We also noted a compositional effect of DAFs. By making it easier to save on capital gains tax, DAFs generate contributions of about 15% more capital gains assets relative to non-DAF givers. For the same gift, this creates a bigger tax loss for the government, thus again stacking the deck against a satisfyingly positive policy determination on Donor Advised Funds.

We flesh out these argument by constructing an imaginary DAF account that earns a tax benefit immediately and earns investment income for 4 to 5 years before it is taken from inventory and compared that two two cases. The pessimistic case was that DAFs are only used for arbitrage and generate no new giving. The optimistic case assumed a behavioral response to DAFs that encouraged enough new giving to meet benefit-cost criteria. Both scenarios gave DAFs a somewhat steep slope to climb. Since DAFs are themselves financial vehicles, it would appear easier to support a discount rate that applies to finance, the 7% rate, rather than the consumer rate of 3%. Because DAFs have such a big effect on timing of both tax consequences and grant making, the rate of discounting used can have a very big effect on the costs and benefits of the tax policy. The fraction of new donations tied up in DAF giving must by almost 7 times greater when we use the higher discount rate.

References

Andreoni, J. (1998). Toward a theory of charitable fund-raising. *Journal of Political Economy*, *106*(6), 1186–1213.

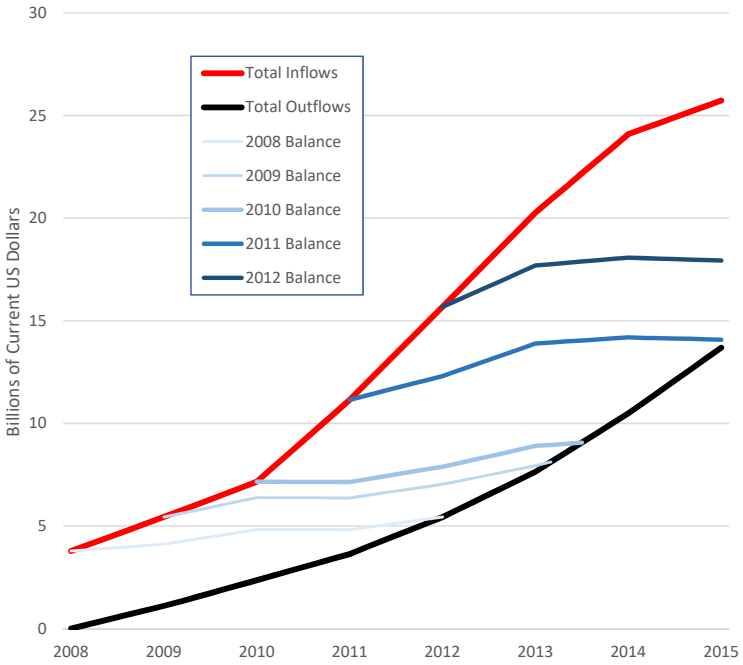
Andreoni, J. (2006). Philanthropy. *Handbook of the Economics of Giving, Altruism and Reciprocity*, *2*, 1201–1269.

Andreoni, J., & Payne, A. A. (2013). Charitable giving. *Handbook of Public Economics*, *5*, 1–50.

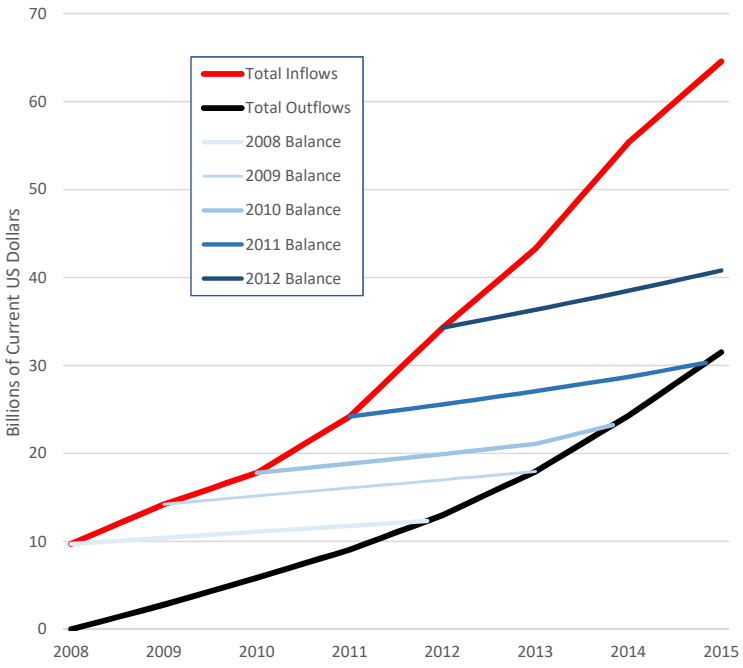
Colinvaux, R. (2013). Charitable contributions of property: A broken system reimagined. *Harv. J. on Legis.*, *50*, 263–329.

Haushofer, J., & Shapiro, J. (2016). The short-term impact of unconditional cash transfers to the poor: Experimental evidence from kenya. *The Quarterly Journal of Economics*, *131*(4), 1973–2042.

Appendix



(a) All Donor Advised Funds



(b) Simulated Returns

Figure 5: Inventory of DAF Dollars paid out on a FIFO basis. When a Blue line goes from the Red Line (total contributions to DAFs) to the Black Line (total grants from DAFs) that year's contributions are fully out of the inventory of DAF funds.

Table 9: The effect of 2013 increases in top marginal income tax rate to 0.396 from 0.35, and top marginal capital gains tax to 0.238 from 0.15 on the composition of contributions. Dependent Variables are current year non-cash contribution as a fraction total contribution. Variables "x and Later" equal 1 in years x and later.

	(1) $\frac{\text{NonCash}}{\text{Contrib}}$	(2) $\frac{\text{NonCash}}{\text{Contrib}}$	(3) $\frac{\text{NonCash}}{\text{Contrib}}$
Lagged Av Account Size	-60.78		-80.64
	(82.14)		(90.09)
2010 and Later		0.0465	0.0454
		(0.0454)	(0.0452)
2011 and Later		-0.0296	-0.0282
		(0.0497)	(0.0512)
2012 and Later		0.0308	0.0310
		(0.0612)	(0.0617)
2013 and Later		0.0663*	0.0690*
		(0.0308)	(0.0317)
2014 and Later		-0.00104	0.00140
		(0.0348)	(0.0361)
2015		-0.0202	-0.0163
		(0.0428)	(0.0433)
Constant	0.560***	0.468***	0.502***
	(0.0518)	(0.0791)	(0.0620)
Observations	91	104	91
R^2	0.0108	0.0681	0.0881

Standard errors in parentheses

Notes: Standard Error is clustered at the organization level.

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 10: Benefit-Cost Assumptions and Analysis, assuming an annual effective annual growth rate in DAFs of 5.4%.Parameters were chosen on the basis of prior analysis. The pessimistic assumption is that DAFs are only used to save taxes and do not increase giving. From this benchmark we can ask what fraction of donations from DAFs would need to be new donations in order to justify DAFs as sound public policy.

a. Assumptions

1. Pay 1000 into DAF at the end of year 0.
2. DAF Payout schedule will be as Specified in Table 6, panel c.
   a. Payout begins in year 3, granting out 50% of the initial Contributions.
   b. The remaining DAF balance is granted in year 4.
3. DAF assets will earn an annual return of 5.4% based on Table 5, Column 1.
4. DAF contributions are 65% non-cash assets, non-DAF donation are 50% non-cash.
5. A marginal income tax rate of 39.6% and long term capital gains tax rate of 23.8% applies to all charitable deductions.
6. Capital gains assets have either 65%, 75%, or 85% capital gains.
7. Discount rate of either 3% or 7% annually are used to calculate present value (PV).

b. Benefit-Cost Calculations

Discount Rate:	3%			7%		
Percent of Capital Gain to Value:	65%	75%	85%	65%	75%	85%
DAFS:						
PV of grants (A):	1029	1029	1029	900	900	900
PV of DAF tax savings (B)	497	512	527	497	512	527
Net Value of DAF ($C = A - B$)	533	517	502	403	388	372
Scenario 1 (Worst Case): Non-DAF Donations replicate DAF grants.						
PV of No-DAF Tax Savings (D):	469	469	469	410	410	410
Net Value of No-DAF ($E = A - D$:	560	560	560	490	490	490
Gain(+)/Loss(-) of DAF ($F = E - C$):	-28	–43	–59	–87	–102	–118
Percent gain/loss (F/A):	–2.7%	–4.2%	–5.7%	–9.6%	–11.4%	–13.1%
Scenario 2 (Best Case): DAFs create enough new charity to justify increased tax cost.						
Minimum new giving as percent of DAF grants to meet Benific-Cost test:	5.2%	8.4%	11.7%	21.5%	26.3%	-117

Table 11: Benefit-Cost Assumptions and Analysis, assuming an annual effective annual growth rate in DAFs of 6.6%. Parameters were chosen on the basis of prior analysis. The pessimistic assumption is that DAFs are only used to save taxes and do not increase giving. From this benchmark we can ask what fraction of donations from DAFs would need to be new donations in order to justify DAFs as sound public policy.

a. Assumptions

1. Pay 1000 into DAF at the end of year 0.
2. DAF Payout schedule will be as Specified in Table 6, panel c.
   a. Payout begins in year 3, granting out 50% of the initial Contributions.
   b. The remaining DAF balance is granted in year 4.
3. DAF assets will earn an annual return of 6.6% based on Table 5, Column 1.
4. DAF contributions are 65% non-cash assets, non-DAF donation are 50% non-cash.
5. A marginal income tax rate of 39.6% and long term capital gains tax rate of 23.8% applies to all charitable deductions.
6. Capital gains assets have either 65%, 75%, or 85% capital gains.
7. Discount rate of either 3% or 7% annually are used to calculate present value (PV).

b. Benefit-Cost Calculations

Discount Rate:	3%			7%		
Percent of Capital Gain to Value:	65%	75%	85%	65%	75%	85%
DAFS:						
PV of grants (A):	1059	1059	1059	926	926	926
PV of DAF tax savings (B):	497	512	527	497	512	527
Net Value of DAF ($C = A - B$):	563	547	532	429	414	399
Scenario 1 (Worst Case): Non-DAF Donations replicate DAF grants.						
PV of No-DAF Tax Savings (D):	483	483	483	422	422	422
Net Value of No-DAF ($E = A - D$):	577	577	577	504	504	504
Gain(+)/Loss(-) of DAF ($F = E - C$):	-14	-29	-45	-75	-90	-106
Percent gain/loss (F/A):	–1.3%	–2.8%	–4.2%	–8.1%	–9.7%	–11.4%
Scenario 2 (Best Case): DAFs create enough new charity to justify increased tax cost.						
Minimum new giving as percent of DAF grants to meet Benific-Cost test:	2.5%	5.4%	8.4%	17.4%	21.8%	26.5%