CESifo WORKING PAPERS
10250 2023
January 2023

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CESifo

Impressum:

CESifo Working Papers
ISSN 2364-1428 (electronic version)
Publisher and distributor: Munich Society for the Promotion of Economic Research - CESifo GmbH
The international platform of Ludwigs-Maximilians University's Center for Economic Studies and the ifo Institute
Poschingerstr. 5, 81679 Munich, Germany
Telephone +49 (0)89 2180-2740, Telefax +49 (0)89 2180-17845, email office@cesifo.de
Editor: Clemens Fuest
https://www.cesifo.org/en/wp
An electronic version of the paper may be downloaded
· from the SSRN website: www.SSRN.com
· from the RePEc website: www.RePEc.org
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CESifo *Working Paper No. 10250*

Quality-Aware Tax Incentives for Charitable Contributions

Abstract

This paper characterizes efficient tax subsidies for charitable contributions, and considers the properties of potential reforms. Contributions are underprovided in the absence of subsidies, and are misdirected if subsidies fail to account for all of the costs that donors incur. It is costly for prospective donors to identify high-quality giving opportunities, so there will be too few of these contributions if all giving receives the same tax treatment. A more efficient alternative is to offer generous tax subsidies that are partially or entirely recouped if recipient organizations subsequently experience precipitous contribution declines.

JEL-Codes: H210, H410, L310.

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January 2023
We thank Timothy Besley, Jason DeBacker, and seminar participants at the University of Michigan for helpful comments on an earlier draft.

1. Introduction

Private contributions to charities and other non-profit organizations provide resources that are essential to the functioning of these institutions and the success of their missions. In recognition of the sacrifices of donors, and in order to encourage greater contributions by offsetting a portion of costs, governments around the world provide tax benefits for contributors. These tax benefits take differing forms, though the common element is that they reward contributions to qualifying charities. There is now considerable evidence that the favorable tax treatment of charitable contributions is responsible for significantly higher giving rates, and greater contribution levels, than would be the case in the absence of these policies.[1]

A notable feature of the favorable tax treatment of charitable contributions is that tax benefits are available almost without regard to the disposition of contributed funds. In the United States, donors are eligible to receive tax deductions, subject to dollar limits, for contributions to any qualifying religious, charitable, scientific, literary, or educational organization. Contributions to all qualifying organizations are treated identically for tax purposes. The government does not inquire into the activities of the recipient nonprofit organizations, other than to verify that they act in pursuit of their exempt purposes and do not engage in self-dealing or other proscribed activities; and the government does not attempt to link tax deductions for charitable contributions directly to social benefits produced by donated funds. This omission is understandable in light of the difficulty of taking an official position on the relative worthiness of different charities, but nonetheless makes it extremely difficult to tailor tax incentives to support efficient donations.

The public good nature of charitable output implies that voluntary contributions are inefficiently low in the absence of subsidies; furthermore, in order for subsidies to support efficient contribution levels, they must reflect all of the costs that donors incur. It is costly for prospective donors to ensure the quality of giving opportunities. A system that fails to distinguish between contributions based on the costs that donors incur will inevitably provide subsidies that are relatively low for contributions to worthwhile causes that are expensive to

[1] For evidence of the effectiveness of tax subsidies in stimulating charitable donations, see Clotfelter and Feldstein (1976), Feldstein and Taylor (1976), Boskin and Feldstein (1977), Brown and Lankford (1992), Randolph (1995), Tiehen (2001), Karlan and List (2007), Meer (2014, 2017), Duquette (2016), Hickey, Minaker, and Payne (2019), and Almunia et al. (2020).

identify and verify. As a result, support for nonprofit activities will be inefficiently allocated between recipient organizations, and may be underprovided in general.

This paper analyzes efficient subsidies for charitable contributions, finding that it is possible to improve the efficiency of resource allocation by tying tax benefits to proxies for costs that contributors incur. The paper considers a reform that adjusts charitable tax deductions based on the subsequent contribution histories of recipient organizations. Under current U.S. law, a contributor who donates $100 to charity is entitled to deduct $100 from taxable income. Under the more efficient alternative considered by this paper, a donor who gives $100 would receive a tax deduction that may differ from $100, and that is permitted only if aggregate contributions to the charity are sufficiently sustained; if contributions decline precipitously, the donor receives a smaller deduction. Mechanically, this operates by permitting donors to take tax deductions in the years when they contribute, but then making compensatory tax adjustments in subsequent years.

Modifying tax benefits based on the future course of contributions rewards donations to organizations that avoid subsequent steep declines. To the extent that contributions reflect positively on a charitable organization's recent suitability as a recipient of donated funds, the course of future contributions offers a market measure of an organization's current quality. Hence a policy of tying tax benefits to future contributions gives donors incentives to find and support high-quality charitable organizations.

There are important efficiency consequences of linking contribution tax benefits to market measures of the qualities of recipient organizations. Donors would thereby have increased incentives to investigate carefully the organizations to which they contribute, in efforts to anticipate the likely path of future contributions. Even in the absence of tax subsidies, donors have incentives to consider carefully to whom they give their money, and to monitor how donated funds are spent; but the public goods problem is that information-gathering and monitoring services are generally underprovided. The costs of information-gathering and monitoring can be considerable, yet the practical impossibility of monitoring and verifying such costs has meant that governments have been unable to defray them in an efficient manner. A tax subsidy that is contingent on sustained contributions has the effect of providing an indirect tax subsidy for costs that contributors incur in verifying the worthiness of recipients of charitable contributions, by exploiting that time reveals information about the qualities of recipient organizations. Nonprofits that are known to be failing receive few if any contributions. Consequently, severe contribution declines are associated with organizational nonperformance. A tax subsidy that the government recoups if contributions sharply decline therefore creates incentives to verify the quality of recipient organizations. And such a system rewards donors who devote time and energy to accumulating information and acting on the information they find.

2. Correcting contribution externalities

Donors choose which nonprofit organizations and causes receive their contributions, doing so on the basis of information that can be costly to obtain.[2] It is instructive to consider an example in which an individual is willing to make an after-tax contribution of $100, and seeks to maximize the value of this contribution. The individual can contribute the $100 to the operations of Organization One, where the money will create value that benefits the contributor and the rest of society, or can search for a higher quality recipient, Organization Two, where a marginal dollar creates even more social value. If confronted with a simple choice it would clearly be better to give the money to Organization Two; but if the search to find the preferred recipient itself consumes resources, then the choice of whether to engage in the search becomes more complicated. For example, if finding the giving opportunity at higher-quality Organization Two costs $20 after taxes, whether it is better to search depends on the relative valuation of $100 contributed to Organization One and $80 contributed to Organization Two.

In the absence of tax subsidies, contribution levels are inefficiently low; but conditional on aggregate contribution levels, donors have incentives to deploy resources in ways that maximize the social value of their contributions. In the example, if a contribution of $80 to Organization Two yields greater social returns than a contribution of $100 to Organization One, then the donor's utility-maximizing choice of whether to devote a portion of the potential contribution to cover the cost of finding Organization Two corresponds to what a social planner would choose.

[2] Eckel and Grossman (1996), Nyborg (2011), Fong and Oberholzer-Gee (2011), Krasteva and Yildirim (2014), Exley (2016), Karlan and Wood (2017), Butera and Horn (2018), and Butera and Houser (2020) analyze the extent to which charitable donors make use of costly information.

An efficient tax policy incentivizes contributions, but when constrained to offer the same benefits for contributions to all recipient organizations, contribution subsidies increase the cost of search relative to the cost of contributions. U.S. taxpayers are entitled to claim deductions for cash and property contributions to qualifying organizations, but are not entitled to claim deductions for costs incurred in searching for better recipients of contributed funds. A taxpayer subject to a 50% tax rate who contributes \$100 to qualifying charities is entitled to a tax deduction of \$100 that reduces his or her tax obligation by \$50, thereby reducing the after-tax cost of contributing to \$50. If that taxpayer instead spends \$10 to find a higher quality charitable recipient to which he or she contributes \$80, the taxpayer receives a tax deduction worth \$40 that reduces the total after-tax cost of contributing and searching to \$50. In both cases the taxpayer advances charitable causes at the cost of \$50 of personal consumption, though in the first case this takes the form of \$100 donated to Organization One, and in the second case it takes the form of \$80 donated to Organization Two. Notably, in the second scenario Organization Two receives \$20 less than Organization One does in the first scenario, the difference representing the diversion of resources to fund the \$10 search expenditure. Search costs are ineligible for the favorable tax treatment afforded contributions to qualifying organizations, hence – in this case – are twice as expensive. But since search adds to the value that donors generate with their funds, it is inefficient not to afford search costs a tax treatment equivalent to that available for donated funds. A simple formal model clarifies this implication.

In order to abstract from distributional issues, it is helpful to assume that all individuals are identical, and therefore benefit equally from the services that nonprofits provide. Charities differ in a scalar characteristic q that is related to the quality of their activities and the services that they provide. A charity of quality level q receiving aggregate contributions G produces value to each consumer that can be represented by a continuous, and continuously differentiable, function $V(q,G)$ that is increasing in both arguments. The $V(q,G)$ function captures valuation in strictly money terms, reflecting consumer valuation relative to private consumption.

The government provides tax benefits for donations, which reduces after-tax contribution costs. Furthermore, donors must expend resources to search for higher-quality organizations and ensure that donated funds will be well spent, with costs that increase in the quality of the organization and the level of donation. Consequently, the cost to an individual of contributing an amount g to an organization of quality q is $(r+c(q))g$, in which r is the after-tax cost of one dollar of contributions, and $(1-r)$ the associated tax benefit; and $c(q)$ is the information and verification cost per dollar of contribution. In this formulation, there are no economies of scale in information acquisition, as larger contributions incur proportionately larger costs of verifying that all donated funds will be used well. And critically, beneficial tax treatment is not available for the information component of the total cost that a donor incurs.

An individual donor who takes the contributions of others to be unaffected by their own action has an incentive to contribute to a charity of quality q up to the point that

(1) $$\frac{\partial V(q,G)}{\partial G}=r+c(q).$$

The left side of (1) is the benefit the donor receives from nonprofit output facilitated by a marginal contribution, and the right side is the cost the donor incurs. Aggregating across all n individuals, condition (1) implicitly defines a function $G(q,r)$ that expresses aggregate contributions to charities of quality level q as a function of the after-tax contribution cost r.

An efficiency-minded government with the ability to offer q-specific tax incentives will choose $r(q)$ to maximize

(2) $$nV\big(q,G(q,r(q))\big)-G(q,r(q))\big[1+c(q)\big],$$

in which the first term is the aggregate value of nonprofit output, and the second term is the resource cost of contributions. The first-order condition for this maximization is

(3) $$n\frac{\partial V(q,G)}{\partial G}=1+c(q).$$

Applying (1), equation (3) implies that

(4) $$r(q)=\frac{1}{n}-\frac{(n-1)}{n}c(q)$$

(5) $$r(q)+c(q)=\frac{1}{n}\left[1+c(q)\right].$$

The pretax cost of giving $1 to a charity of quality q is $\left[1+c(q)\right]$. Equation (5) indicates that efficiency requires that tax subsidies dramatically reduce the cost that individuals face – which is sensible, since an individual's contribution creates benefits for $(n-1)$ others, so reducing the total cost by a factor of $\frac{(n-1)}{n}$ supports an efficient contribution level.[3]

Equation (4) characterizes efficient tax subsidies. In order for equation (4) to hold for all charitable contributions, it is necessary for r to vary with q. In practice, governments do not differentiate tax subsidies this way; instead, they choose single values of r that apply to all charities. Such subsidies are inefficient, since they reduce the total cost of giving to low-quality charities to a greater degree than they do contributions to high-quality charities. A government that is unable to differentiate the tax subsidy between contributions to charities of differing quality levels faces a constrained problem in maximizing aggregate welfare, one that inevitably entails under-subsidizing some contributions and over-subsidizing others relative to a more efficient alternative.

In analyzing this constrained problem it is convenient to consider a setting in which there is a continuous distribution of charities at all quality types, with a cumulative distribution function $F(q)$, associated marginal distribution function $dF(q)$, and a large number of donors. A government seeking to maximize aggregate welfare will choose r to maximize

(6) $$n\int V\left(q,G(q,r)\right)dF(q)-\int G(q,r)\left(1+c(q)\right)dF(q).$$

Differentiating (6) with respect to r yields the first-order condition

(7) $$n\int \frac{\partial V(q,G)}{\partial G}\frac{\partial G(q,r)}{\partial r}dF(q)-\int\left[1+c(q)\right]\frac{\partial G(q,r)}{\partial r}dF(q)=0.$$

[3] Underprovision in the absence of subsidies is a standard feature of private provision of public goods; see Bergstrom, Blume, and Varian (1986), Bernheim (1986), and Scotchmer (2002). Hochman and Rodgers (1977), Diamond (2006) and Schizer (2009) analyze the features of optimal corrective tax subsidies.

Applying (1), (7) implies

$$r = \frac{1}{n} - \frac{(n-1)}{n} \frac{\int c(q) \frac{\partial G(q,r)}{\partial r} dF(q)}{\int \frac{\partial G(q,r)}{\partial r} dF(q)} . \tag{8}$$

Equation (8) captures the standard efficiency condition as a special case: if $c(q)=0$ at all values of q, then (8) implies that $r=\frac{1}{n}$. And (8) differs from the efficient q-specific tax subsidies characterized by (4) in that $c(q)$ in (4) is replaced by a weighted average of $c(q)$ in (8), with weights given by $\frac{\partial G(q,r)}{\partial r} dF(q)$. Governments that are constrained to offer uniform contribution subsidies can set subsidy rates, as in (8), that defray average information costs, with averages calculated based on the marginal effects of changing subsidy rates. This is not as efficient as a policy of charity-specific subsidies adjusted for information costs, but it is as close as the government can manage given the restriction that the same tax subsidy rate applies to contributions to all nonprofit recipients.

3. Information-sensitive tax policy.

A government offering a single tax subsidy at rate $(1-r)$ has the ability to modify its treatment of charitable contributions in a way that would more closely align individual incentives with the social return to information captured by (4). The most obvious such remedy would be to provide a tax subsidy to defray costs incurred in obtaining information, but the challenge is that these costs can be very difficult to verify. In lieu of such direct adjustment it is necessary to consider indirect expedients.

To the degree that costs associated with contributing to nonprofits of different quality levels are correlated with events that the government can observe, tax benefits can be conditioned on these events in ways that compensate donors for the costs of information acquisition. For example, low-quality nonprofits are more likely than high-quality nonprofits to experience various organizational debacles such as accounting or personnel scandals, serious programmatic or investment errors, or major financial reverses. Any of these is likely to prompt significant subsequent reductions in gift receipts,[4] as donors reconsider whether such nonprofits are worthy recipients of their funds.

3.1. Outcome-contingent tax incentives.

It is possible to improve the efficiency of donation incentives by conditioning tax subsidies on measures of *q* that proxy for $c(q)$. To take a specific case, suppose that nonprofits differ in their likelihoods of organizational adversity, so *q* equals the probability that a nonprofit organization avoids a severe mishap, with $q > 0$ for all organizations, and $(1-q)$ is the probability of an adverse event. The government is able to offer a tax treatment in which the net cost to a donor of giving $1 to a nonprofit is r_0 if there is an adverse event that prompts a substantial decline in subsequent contributions, and r_1 if there is no such adverse event. Since donors cannot be sure ex ante of whether an adverse event will occur, the expected cost of acquiring information and contributing an amount *g* is

(9) $$\left[r_1 q + r_0(1-q) + c(q)\right] g \, .$$

In this circumstance, the first-order condition characterizing the behavior of a risk-neutral donor implies that

(10) $$\frac{\partial V(q,G)}{\partial G} = \left[r_1 q + r_0(1-q)\right] + c(q) \, .$$

Equation (10) characterizes individual behavior when the tax benefits of contributing vary with subsequent events. Clearly, if $r_0 = r_1$, then (10) is identical to (1); and as noted in section 2, this outcome is inefficient because the right side of (1) increases as *q* rises. Since higher values of r_0 reduce the extent to which the right side of (10) increases with *q*, one way to address the inefficiency problem is to choose a value of r_0 greater than r_1. Imposing a value of r_0 greater than r_1 corresponds to reducing the tax benefits of contributing to organizations that

[4] See, for example, the evidence of organizational fraud in Greenlee et al. (2007), and contribution impacts in

subsequently experience adverse events. This has the effect of implicitly increasing the return to information acquisition by making it more expensive to contribute to lower-quality charities, since donors stand to lose $(r_0 - r_1)$ for every dollar contributed to such organizations.

It is clear that making r_0 greater than r_1 has the potential to improve the efficiency of charitable contributions. Denoting aggregate contributions to organizations of quality level q by $G(q, r_0, r_1)$, a government that designs tax incentives to maximize aggregate welfare will choose r_0 and r_1 to maximize

(11) $$n\int V(q, G(q, r_0, r_1))\,dF(q) - \int G(q, r_0, r_1)(1 + c(q))\,dF(q).$$

Separately differentiating (11) with respect to r_0 and r_1 yields the first-order conditions

(12a) $$n\int \frac{\partial V(q,G)}{\partial G}\frac{\partial G(q,r_0,r_1)}{\partial r_0}dF(q) - \int \left[1 + c(q)\right]\frac{\partial G(q,r_0,r_1)}{\partial r_0}dF(q) = 0$$

(12b) $$n\int \frac{\partial V(q,G)}{\partial G}\frac{\partial G(q,r_0,r_1)}{\partial r_1}dF(q) - \int \left[1 + c(q)\right]\frac{\partial G(q,r_0,r_1)}{\partial r_1}dF(q) = 0.$$

Equation (10) implicitly defines the function $G(q, r_0, r_1)$. Differentiating (10) with respect to r_0 and r_1 yields the conditions

(13a) $$\frac{\partial^2 V(q,G)}{\partial G^2}\frac{\partial G(q,r_0,r_1)}{\partial r_0} = 1 - q$$

(13b) $$\frac{\partial^2 V(q,G)}{\partial G^2}\frac{\partial G(q,r_0,r_1)}{\partial r_1} = q,$$

from which it follows that

(14) $$\frac{\partial G(q,r_0,r_1)}{\partial r_0} = \frac{\partial G(q,r_0,r_1)}{\partial r_1}\frac{(1-q)}{q}.$$

LeClair (2019).

Denoting by $d\psi(q)$ the effect of changes in r_1 on aggregate charitable contributions at quality level q, $d\psi(q) \equiv \frac{\partial G(q, r_0, r_1)}{\partial r_1} dF(q)$, equations (10), (12a,b) and (14) together imply that

(15a) $$r_1 \int q d\psi(q) = \frac{1}{n} \int d\psi(q) - r_0 \int (1-q) d\psi(q) - \left(\frac{n-1}{n}\right) \int c(q) d\psi(q)$$

(15b) $$r_1 \int d\psi(q) = \frac{1}{n} \int \frac{1}{q} d\psi(q) - r_0 \int \frac{(1-q)}{q} d\psi(q) - \left(\frac{n-1}{n}\right) \int \frac{c(q)}{q} d\psi(q).$$

Together, equations (15a) and (15b) imply that

(16) $$r_0 = \frac{1}{n} + \left(\frac{n-1}{n}\right) \frac{\int d\psi(q) \int c(q) d\psi(q) - \int q d\psi(q) \int \frac{c(q)}{q} d\psi(q)}{\int \frac{1}{q} d\psi(q) \int q d\psi(q) - \left(\int d\psi(q)\right)^2}$$

(17) $$r_0 - r_1 = \left(\frac{n-1}{n}\right) \frac{\int \frac{1}{q} d\psi(q) \int c(q) d\psi(q) - \int d\psi(q) \int \frac{c(q)}{q} d\psi(q)}{\int \frac{1}{q} d\psi(q) \int q d\psi(q) - \left(\int d\psi(q)\right)^2}.$$

Equations (16) and (17) characterize efficient levels of after-tax prices of charitable contributions. Equation (16) can be rewritten as

(18) $$r_0 = \frac{1}{n} - \left(\frac{n-1}{n}\right) \frac{\int \left[\frac{c(q)}{q} - \frac{\int \frac{c(q)}{q} d\psi(q)}{\int d\psi(q)}\right] \left[q - \frac{\int q d\psi(q)}{\int d\psi(q)}\right] d\psi(q)}{\int \left[\frac{1}{q} - \frac{\int \frac{1}{q} d\psi(q)}{\int d\psi(q)}\right] \left[q - \frac{\int q d\psi(q)}{\int d\psi(q)}\right] d\psi(q)}.$$

The numerator of the expression on the right side of (18) has an interpretation: it is the weighted covariance of $\frac{c(q)}{q}$ and q, with weights given by $d\psi(q)$. And the denominator of this expression is the weighted covariance of $\frac{1}{q}$ and q. Consequently, equation (18) implies that

(19) $$r_0 = \frac{1}{n} - \left(\frac{n-1}{n}\right)\frac{\operatorname{cov}\left(\frac{c(q)}{q}, q\right)}{\operatorname{cov}\left(\frac{1}{q}, q\right)}.$$

Similarly, equation (17) can be rewritten as

(20) $$r_0 - r_1 = \left(\frac{n-1}{n}\right)\frac{\int\left[\frac{1}{q} - \frac{\int \frac{1}{q}d\psi(q)}{\int d\psi(q)}\right]\left[c(q) - \frac{\int c(q)d\psi(q)}{\int d\psi(q)}\right]d\psi(q)}{\int\left[\frac{1}{q} - \frac{\int \frac{1}{q}d\psi(q)}{\int d\psi(q)}\right]\left[q - \frac{\int q d\psi(q)}{\int d\psi(q)}\right]d\psi(q)},$$

which implies that

(21) $$r_0 - r_1 = \left(\frac{n-1}{n}\right)\frac{\operatorname{cov}\left(\frac{1}{q}, c(q)\right)}{\operatorname{cov}\left(\frac{1}{q}, q\right)}.$$

The covariance terms that appear in (19) and (21) illustrate the considerations that determine the values of r_0 and r_1. Clearly, the denominator of the right side of (21) is negative; and since $c'(q) > 0$ implies that $c(q)$ is uniformly decreasing in $\frac{1}{q}$, it follows that the numerator of the right side is also negative, so $(r_0 - r_1) > 0$. The magnitude of the efficient quality premium $(r_0 - r_1)$ depends on the relative degrees to which $c(q)$ and q covary with $\frac{1}{q}$: if $c(q)$ increases rather little with q, then the quality premium is small, whereas the quality premium is large, and potentially even greater than one, if $c(q)$ is sharply affected by q. The $d\psi(q)$ weights used in calculating these covariances reflect that what matters for efficient policy are the effects of price changes on total amounts contributed at different quality levels.

Equation (19) indicates that the after-tax price of giving conditional on adverse subsequent events, r_0, is also a function of the degree to which $c(q)$ varies with q. The equation implies that r_0 exceeds $\frac{1}{n}$ if $\operatorname{cov}\left(\frac{c(q)}{q}, q\right) > 0$, but is less than $\frac{1}{n}$ if $\operatorname{cov}\left(\frac{c(q)}{q}, q\right) < 0$. Recall that $\frac{1}{n}$ is the value of r_0 in the absence of information costs. If $c(q)$ is a concave function of q, so that $\operatorname{cov}\left(\frac{c(q)}{q}, q\right) < 0$, then the price of giving conditional on adverse events is less than $\frac{1}{n}$, implying a heavy government subsidy. The reason why the conditional tax subsidy is so large in the case of an adverse outcome is that even poorly informed donors incur some information costs, which an efficient policy takes into account. The more noteworthy case is the opposite: if $c(q)$ is a convex function of q, so that $\operatorname{cov}\left(\frac{c(q)}{q}, q\right) > 0$, then the tax subsidy for giving conditional on a subsequent adverse event is smaller than the tax subsidy in the absence of information costs. The reason why the tax subsidy is so small in this case is that the government has only two instruments r_0 and r_1, with which to incentivize giving over a wide distribution of q. Convexity of the $c(q)$ function implies that outcomes are highly informative about costs that donors incur, so from (21) it follows that $(r_0 - r_1)$ will be large in order to compensate donors to expensive high-quality organizations. In order not to provide excessive average subsidies it is then necessary to limit the size of $(1 - r_0)$ – and notably, whether this subsidy is larger or smaller than the subsidy in the absence of information costs depends on the average convexity of the $c(q)$ function.

3.2. Feasibility of fully efficient outcomes.

It is useful to identify circumstances in which a pair of after-tax prices (r_0, r_1) can support fully efficient information acquisition. Suitably modifying the derivation of equation (4), full efficiency requires that the condition

$$r_1 q + r_0(1-q) = \frac{1}{n} - \frac{(n-1)}{n} c(q) \tag{22}$$

holds at every value of *q*. Twice differentiating both sides of (22) with respect to *q*, this requires that $c''(q) = 0$. Together with the reasonable requirement that $c(0) = 0$, this condition implies that information costs take the scalar form $c(q) = kq$.

If $c(q) = kq$, then from (16), $r_0 = \frac{1}{n}$, the efficient after-tax cost of contributing in the absence of information costs; and from (17), $r_0 - r_1 = \frac{k(n-1)}{n}$. If information costs are negligible, so that $k \to 0$, then $r_1 \to r_0$, and the tax treatment of contributions to nonprofits experiencing adverse events is the same as the tax treatment of contributions to other nonprofits. As information costs rise the implied value of r_1 declines, reflecting the need to compensate donors for the externalities associated with the costs they incur in making higher-quality contributions. It is easily verified that if $c(q) = kq$, then (22) is satisfied at every *q*.

If the cost of information acquisition takes a form other than $c(q) = kq$, so that $c''(q) \neq 0$, then it is not possible to choose a single pair (r_0, r_1) that satisfies (22) at all values of *q*. In such cases the values of (r_0, r_1) characterized by (16) and (17) will come as close to maximizing (11) as is possible with these instruments. If the government has access to information and tax instruments that permit it to choose more than two outcome-contingent tax treatments of charitable contributions, then it can use this flexibility to approximate more closely the efficient outcome described by (22).

3.3. Implicit tax deductibility.

There are circumstances in which some of the costs of information acquisition are implicitly deductible for tax purposes. For example, an individual might devote time and energy to analyzing potential nonprofit donation recipients, and these efforts might instead have been deployed to earn market income that would have been taxed. To the extent that the cost of acquiring information about nonprofits includes foregone otherwise-taxable market income, then the tax saving from not earning market income is equivalent to an implicit deduction. If a portion α of information acquisition expenses is implicitly deductible against income that is taxed at rate $\tilde{\tau}$, and a portion $(1-\alpha)$ nondeductible, then the cost of contributing becomes

(23) $$\left\{r_1 q + r_0(1-q) + c(q)\left[\alpha(1-\tilde{\tau}) + (1-\alpha)\right]\right\} g,$$

and the first-order condition characterizing donor behavior implies that

(24) $$\frac{\partial V(q,G)}{\partial G} = r_1 q + r_0(1-q) + c(q)\left[\alpha(1-\tilde{\tau}) + (1-\alpha)\right].$$

If some of the costs of charitable contributions are implicitly deductible, then efficiency no longer entails maximizing (11), as the portion of the cost that is implicitly deductible is less expensive to society. If the implicitly deductible expense is time and energy, and individual income is taxed at rate $\tilde{\tau}$, then tax distortions to labor supply imply that individuals value \$1 of (pretax) time and energy at $(1-\tilde{\tau})$. Equation (11) is expressed entirely in consumption terms; modifying (11) to incorporate the consumption-equivalent of implicitly deductible expenses produces

(25) $$n\int V\left(q, G(q, r_0, r_1)\right) dF(q) - \int G(q, r_0, r_1)\left[1 + c(q)(1-\alpha\tilde{\tau})\right] dF(q).$$

Imposing (24) and maximizing (25) over the choices of r_0 and r_1 yields

(26a) $$r_1 \int q\, d\psi(q) = \frac{1}{n}\int d\psi(q) - r_0\int (1-q)\, d\psi(q) + \left(\frac{n-1}{n}\right)\int c(q)(1-\alpha\tilde{\tau})\, d\psi(q)$$

(26b) $$r_1\int d\psi(q)=\frac{1}{n}\int\frac{1}{q}d\psi(q)-r_0\int\frac{(1-q)}{q}d\psi(q)+\left(\frac{n-1}{n}\right)\int\frac{c(q)(1-\alpha\tilde{\tau})}{q}d\psi(q).$$

Together, equations (26a) and (26b) imply that

(27) $$r_0=\frac{1}{n}+\left(\frac{n-1}{n}\right)(1-\alpha\tilde{\tau})\frac{\int d\psi(q)\int c(q)d\psi(q)-\int qd\psi(q)\int\frac{c(q)}{q}d\psi(q)}{\int\frac{1}{q}d\psi(q)\int qd\psi(q)-\left(\int d\psi(q)\right)^2}$$

(28) $$r_0-r_1=\left(\frac{n-1}{n}\right)(1-\alpha\tilde{\tau})\frac{\int\frac{1}{q}d\psi(q)\int c(q)d\psi(q)-\int d\psi(q)\int\frac{c(q)}{q}d\psi(q)}{\int\frac{1}{q}d\psi(q)\int qd\psi(q)-\left(\int d\psi(q)\right)^2}.$$

Equations (27) and (28) are identical to (16) and (17), except for the appearance of $(1-\alpha\tilde{\tau})$ on the right sides of both (27) and (28). Partial implicit deductibility dampens the extent to which efficient values of r_0 and r_1 incorporate features of the distribution of *q*, offsetting the impact that implicit deductibility has on the cost of informed contributions even in the absence of explicit tax incentives. If $c(q)=kq$, then (27) and (28) imply that $r_0=\frac{1}{n}$ and $r_0-r_1=\frac{k(n-1)}{n}(1-\alpha\tau)$. In this example, it is again the case that tax policy supports efficient contributions, as (22) is satisfied at every value of *q*. Consequently, while implicit deductibility reduces the magnitudes of efficient tax subsidies, it does not change the combined economic impact of implicit and explicit tax subsidies.

3.4. Warm glow preferences.

The analysis to this point takes individual utility to be a function of charitable output and individual consumption: individuals benefit from charitable output whether or not they contribute to the charities in question. An alternative specification of individual utility holds that at least part of the return that a donor receives for their contribution is the warm glow produced by the act of contributing, regardless of the consequences of a donation.[5] It is useful to examine the potential effects of warm glow motivations on the design of efficient tax subsidies.

Suppose that a donor contributing g receives in return a warm glow valued at wg in addition to the benefit of whatever additional charitable output the recipient nonprofit thereby produces. The net cost to the donor of contributing g is then

(29) $$\left[r_1 q + r_0\left(1-q\right) + c\left(q\right) - w\right] g ,$$

and the first-order condition characterizing donor behavior implies that

(30) $$\frac{\partial V\left(q,G\right)}{\partial G} = r_1 q + r_0\left(1-q\right) + c\left(q\right) - w \ .$$

A government designing tax incentives to maximize aggregate welfare will choose r_0 and r_1 to maximize

(31) $$n\int V\left(q, G\left(q, r_0, r_1\right)\right) dF\left(q\right) - \int G\left(q, r_0, r_1\right)\left[1 + c\left(q\right) - w\right] dF\left(q\right),$$

with associated first-order conditions

(32a) $$n\int\left[r_1 q + r_0\left(1-q\right) + c\left(q\right) - w\right] d\psi\left(q\right) = \int\left[1 + c\left(q\right) - w\right] d\psi\left(q\right)$$

(32b) $$n\int\left[r_1 q + r_0\left(1-q\right) + c\left(q\right) - w\right]\frac{1}{q} d\psi\left(q\right) = \int\left[1 + c\left(q\right) - w\right]\frac{1}{q} d\psi\left(q\right).$$

Together, equations (32a) and (32b) imply that

(33) $$r_0 = \frac{1}{n} + \left(\frac{n-1}{n}\right) w + \left(\frac{n-1}{n}\right)\frac{\int d\psi\left(q\right)\int c\left(q\right) d\psi\left(q\right) - \int q\, d\psi\left(q\right)\int\frac{c\left(q\right)}{q} d\psi\left(q\right)}{\int\frac{1}{q} d\psi\left(q\right)\int q\, d\psi\left(q\right) - \left(\int d\psi\left(q\right)\right)^2} \ .$$

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[5] See, for example, Andreoni (1989, 1990), Diamond (2006), Crumpler and Grossman (2008), Konow (2010), Null (2011), Ottoni-Wilhelm, Vesterlund, and Xie (2017), and Carpenter (2021).

The effect of warm glow preferences is to increase the value of r_0 by $\left(\frac{n-1}{n}\right)w$, which offsets the normal contribution subsidy by the amount of private benefits contributors enjoy. This adjustment prevents contribution subsidies from thereby subsidizing warm glow, which is a private good. Equations (32b) and (33) imply that

$$(34) \qquad r_0 - r_1 = \left(\frac{n-1}{n}\right) \frac{\int \frac{1}{q} d\psi(q) \int c(q) d\psi(q) - \int d\psi(q) \int \frac{c(q)}{q} d\psi(q)}{\int \frac{1}{q} d\psi(q) \int q d\psi(q) - \left(\int d\psi(q)\right)^2},$$

which is the same as (17). This specification of warm glow preferences does not change the implied information premium in the tax treatment of contributions, since warm glow reduces the cost of contributions both from the standpoint of the donor and from the standpoint of society, doing so in a way that does not depend on the quality of the recipient organization.

The warm glow that a donor enjoys might vary with q. Accommodating q-dependent warm glow requires substituting $w(q)$ for w in (29)-(32b), which has the effect of replacing $c(q)$ with $\left[c(q) - w(q)\right]$ in (33) and (34), and omitting the $\left(\frac{n-1}{n}\right)w$ term in (33). Warm glow reduces the net cost, $\left[c(q) - w(q)\right]$, that a donor incurs, so if for example gifts to high-q recipient organizations generate greater warm glow than other gifts, this consideration reduces the magnitude of the (negative) covariance of $\left(\frac{1}{q}\right)$ and $\left[c(q) - w(q)\right]$, which from (21) reduces $(r_0 - r_1)$. In this scenario, an efficient adjustment for warm glow preferences entails modifying implied subsidies to reduce the difference in the tax treatments of contributions to high-q and low-q recipients.

4. Constrained tax subsidies

The derivations of (16), (17), and other conditions characterizing the efficient tax treatment of charitable contributions proceed from the assumption that the government has an unlimited budget for this purpose, and that its policy choices are constrained only by a desire to promote efficient resource allocation. This produces the unrealistic implication that in the absence of information costs the government would subsidize contributions by $\frac{(n-1)}{n}$ per dollar of contribution. While a subsidy that generous has the effect of correcting for the contribution externality and thereby supporting an efficient level of charitable contributions, there are obvious practical challenges, including the difficulty of verifying subsidy claims and enforcing such a regime, and concerns about the budgetary cost of such a scheme.

This section considers the implications of the costs that governments pay in subsidizing contributions and thereby reducing tax collections. This is most easily incorporated into the model by introducing a budget constraint of the form

(35) $$\int\left[1-r_1 q-r_0(1-q)\right]G(q,r_0,r_1)dF(q)\leq B,$$

in which B is the government's (unspecified) budget for contribution subsidies. An efficiency-minded government chooses r_0 and r_1 to maximize (11), subject to (35), yielding the first-order conditions

(36a) $$\begin{aligned}&n\int\frac{\partial V(q,G)}{\partial G}\frac{\partial G(q,r_0,r_1)}{\partial r_0}dF(q)-\int\left[1+c(q)\right]\frac{\partial G(q,r_0,r_1)}{\partial r_0}dF(q)\\&-\lambda\int\left[1-r_1 q-r_0(1-q)\right]\frac{\partial G(q,r_0,r_1)}{\partial r_0}dF(q)+\lambda\int(1-q)G(q,r_0,r_1)dF(q)=0\end{aligned}$$

(36b) $$\begin{aligned}&n\int\frac{\partial V(q,G)}{\partial G}\frac{\partial G(q,r_0,r_1)}{\partial r_1}dF(q)-\int\left[1+c(q)\right]\frac{\partial G(q,r_0,r_1)}{\partial r_1}dF(q)\\&-\lambda\int\left[1-r_1 q-r_0(1-q)\right]\frac{\partial G(q,r_0,r_1)}{\partial r_1}dF(q)+\lambda\int qG(q,r_0,r_1)dF(q)=0\end{aligned},$$

in which λ is the Lagrange multiplier associated with the constraint (35).

In solving the system defined by (36a) and (36b), it is useful to define the variable $\eta(q)$ as the semi-elasticity of aggregate contributions, G, with respect to the after-tax cost of contributing in the absence of an adverse event, r_1:

(37)
$$\eta(q) \equiv \frac{\partial G(q,r_0,r_1)}{\partial r_1}\frac{1}{G(q,r_0,r_1)}.$$

Imposing (10), (14) and (37), (36a) and (36b) imply that

(38)
$$r_0 = \frac{1+\lambda}{n+\lambda} + \left(\frac{n-1}{n+\lambda}\right)\frac{\int d\psi(q)\int c(q)d\psi(q) - \int q d\psi(q)\int \frac{c(q)}{q}d\psi(q)}{\int \frac{1}{q}d\psi(q)\int q d\psi(q) - \left(\int d\psi(q)\right)^2}$$
$$+\left(\frac{\lambda}{n+\lambda}\right)\frac{\int d\psi(q)\int \frac{q}{\eta(q)}d\psi(q) - \int q d\psi(q)\int \frac{1}{\eta(q)}d\psi(q)}{\int \frac{1}{q}d\psi(q)\int q d\psi(q) - \left(\int d\psi(q)\right)^2}$$

(39)
$$r_0 - r_1 = \left(\frac{n-1}{n+\lambda}\right)\frac{\int \frac{1}{q}d\psi(q)\int c(q)d\psi(q) - \int d\psi(q)\int \frac{c(q)}{q}d\psi(q)}{\int \frac{1}{q}d\psi(q)\int q d\psi(q) - \left(\int d\psi(q)\right)^2}$$
$$+\left(\frac{\lambda}{n+\lambda}\right)\frac{\int \frac{1}{q}d\psi(q)\int \frac{q}{\eta(q)}d\psi(q) - \int d\psi(q)\int \frac{1}{\eta(q)}d\psi(q)}{\int \frac{1}{q}d\psi(q)\int q d\psi(q) - \left(\int d\psi(q)\right)^2},$$

or

(40)
$$r_0 = \frac{1+\lambda}{n+\lambda} - \left(\frac{n-1}{n+\lambda}\right)\frac{\operatorname{cov}\left(\frac{c(q)}{q},q\right)}{\operatorname{cov}\left(\frac{1}{q},q\right)} - \left(\frac{\lambda}{n+\lambda}\right)\frac{\operatorname{cov}\left(\frac{1}{\eta(q)},q\right)}{\operatorname{cov}\left(\frac{1}{q},q\right)}$$

(41)
$$r_0 - r_1 = \left(\frac{n-1}{n+\lambda}\right)\frac{\operatorname{cov}\left(\frac{1}{q},c(q)\right)}{\operatorname{cov}\left(\frac{1}{q},q\right)} - \left(\frac{\lambda}{n+\lambda}\right)\frac{\operatorname{cov}\left(\frac{1}{q},\frac{q}{\eta(q)}\right)}{\operatorname{cov}\left(\frac{1}{q},q\right)}.$$

A binding budget constraint makes equation (40) differ from (19) in three respects. The first is that the intercept term is now $\left(\frac{1+\lambda}{n+\lambda}\right)$ rather than $\frac{1}{n}$, so tighter budget constraints in the form of higher values of λ reduce subsidy levels, moving r_0 away from $\frac{1}{n}$ and toward 1. The second difference is that $\left(\frac{n-1}{n+\lambda}\right)$ instead of the prior $\left(\frac{n-1}{n}\right)$ now premultiplies the ratio that captures information costs, so higher values of λ reduce the extent to which information costs affect r_0. And the third term on the right side of (40) is entirely new, capturing the budgetary impact of discouraging contributions with higher values of r_1.

Equation (41) differs from (21) in two ways; the first in that $\left(\frac{n-1}{n+\lambda}\right)$ instead of the prior $\left(\frac{n-1}{n}\right)$ premultiplies the first term on the right side, so higher values of λ dampen the effect of information costs on the implied difference $\left(r_0-r_1\right)$. And the second difference is that the (new) second term on the right side, reflecting the budgetary impact of contribution changes, generally pushes in the direction of a smaller value of $\left(r_0-r_1\right)$ the more responsive are donations to their tax treatment.

If $\eta(q)=-\nu q$, so that higher costs of contributing reduce contributions proportionately at all quality levels, then $\frac{\operatorname{cov}\left(\frac{1}{\eta(q)},q\right)}{\operatorname{cov}\left(\frac{1}{q},q\right)}=\frac{1}{\nu}$ and $\operatorname{cov}\left(\frac{1}{q},\frac{q}{\eta(q)}\right)=0$. In this scenario, (40) and (41) imply

$$r_0=\frac{1+\lambda+\frac{\lambda}{\nu}}{n+\lambda}-\left(\frac{n-1}{n+\lambda}\right)\frac{\operatorname{cov}\left(\frac{c(q)}{q},q\right)}{\operatorname{cov}\left(\frac{1}{q},q\right)} \tag{42}$$

$$r_0 - r_1 = \left(\frac{n-1}{n+\lambda}\right)\frac{\operatorname{cov}\left(\frac{1}{q}, c(q)\right)}{\operatorname{cov}\left(\frac{1}{q}, q\right)}. \quad (43)$$

Equations (42) and (43) share the feature that a higher shadow value of government revenue (λ) reduces the sensitivity of donation subsidies to the cost of obtaining information, as in both expressions a higher λ increases the relative magnitude of the information-insensitive term. A higher value of ν, reflecting greater sensitivity of contributions to their tax treatment, does not change $r_0 - r_1$, the extent to which tax subsidies depend on outcomes; but if government revenue is costly, then a higher ν reduces the overall level of subsidies, as reflected in the first term of (42). It is noteworthy that the value of ν does not affect the implied information subsidy $r_0 - r_1$, even though high-quality contributions are heavily subsidized and therefore expensive to the government. The reason why this factor does not bear on the optimal tax treatment is that high-quality contributions also deliver greater social value than low-quality contributions, and these considerations exactly balance with efficient choices of r_0 and r_1.

5. Practical implementation

Implementing the subsidy schemes analyzed in sections 3-4 requires identifying events that justify providing a subsidy of $(1-r_0)$ rather than the larger $(1-r_1)$, and then actually delivering the appropriate subsidy. Possibly the most straightforward method of delivering state-contingent subsidies is first to permit individual contributors to claim charitable deductions as they currently do, treating the current tax benefits associated with deductibility as corresponding to $(1-r_1)$. Then if subsequent events mandate reducing tax benefits to $(1-r_0)$, this could be accomplished in either of two ways, the first of which is to require the nonprofit that received the contribution to issue an information form to the contributor and file a corresponding form with the tax authority, effectively requiring the contributor to have an income inclusion in a subsequent year. For example, the contributor would get an appropriate tax deduction in the year of contribution and have a compensating income inclusion in a subsequent year. The second method is to put responsibility on taxpayers: those who claim charitable deductions in one year have mandatory income inclusions in subsequent years unless they are able to verify that the recipients of their gifts did not have subsequent events that would disqualify the contributions.

Equations (42) and (43) offer guidance concerning the magnitudes of the potential recoupment $(r_0 - r_1)$. If $c(q) = kq$, (42) and (43) imply

(44) $$r_0 = \frac{1+\lambda+\frac{1}{\lambda}}{n+\lambda}$$

(45) $$r_1 = \frac{1+\lambda+\frac{\lambda}{\nu}-k(n-1)}{n+\lambda}.$$

Defining τ by $r_1 \equiv 1-\tau$, it follows from (45) that

(46) $$\lambda = \frac{(n-1)(1+k)-\tau n}{\left(\tau+\frac{1}{\nu}\right)},$$

and (44) and (46) together imply that

(47) $$1-r_0 = \frac{\tau\left[1+\frac{n}{(n-1)\nu}\right]-\frac{k}{\nu}}{\left[1+\frac{n}{(n-1)\nu}+k\right]}.$$

Equation (47) implies that if $\tau = \frac{k}{\left[\nu+\frac{n}{(n-1)}\right]}$, then $r_0 = 1$, and the government recoups all of the initial subsidy if subsequent events warrant a disqualification. If n is large and $\nu = 1$, then this condition is $\tau = k/2$. Taking $\tau = 0.25$, it follows that if $k = 0.5$ then it is efficient to recoup all of the initial tax deduction in the case of adverse subsequent events. This may be a reasonable approximation to information costs in practice: if $k = 0.5$, then the information cost of giving to a perfectly reliable charitable recipient exceeds by 25% the amount contributed the information cost of giving to a recipient that has a 50 percent chance of being subsequently disqualified. And more generally, since

(48)
$$1-r_0=\tau-\frac{k\left(\tau+\frac{1}{\nu}\right)}{\left[1+k+\frac{n}{(n-1)\nu}\right]},$$

it follows that an efficient policy will always recoup a positive amount $\frac{k\left(\tau+\frac{1}{\nu}\right)}{\left[1+k+\frac{n}{(n-1)\nu}\right]}$ in response to a subsequent adverse event.

What observable event might the government use to disqualify contributions? The most straightforward method is to use a market test based on a severe decline in contributions. For example, an individual who contributed to a charity in year one might be permitted a tax deduction of $200 for that taxable year. If contributions to the same charity decline sharply in year two, and the right side of (47) is zero, then the same individual would be required in year three to include $200 of taxable income as recovery of the year one tax deduction.

One serious possible concern with this method of providing tax subsidies is that contribution adjustments might exhibit wild annual fluctuations, some of them systematic. For example, many nonprofit organizations conduct periodic fund drives, a practice that is thought to encourage greater contributions over time than would be obtained without fund drives. A scheme that automatically adjusts tax deductibility for changes in subsequent annual giving might have a chilling effect on fund drives, since donors could harbor realistic concerns that contributions would fall in the year following such a drive. Campaigns to raise funds for large one-time expenditures, such as a new building, might be particularly prone to this problem. Quite apart from fund drives, single large donors to a charitable organization might worry that their contributions would crowd out subsequent contributions by other individuals who conclude that the large donation successfully meets the organization's needs.[6]

It is sensible to modify the tax deduction scheme to limit the impact of recurring annual swings in contributions, since the resulting periodic downturns are products of deliberate organizational policy rather than indicators of low organizational quality. One possibility is to permit organizations to calculate contribution growth changes over multiple-year windows, with options to apply longer windows in years surrounding major fund drives. It is likewise appropriate to adjust for the impact of macroeconomic cycles, which also induce contribution downturns unrelated to organizational quality. Since donors are apt to find it nettlesome to do the calculations necessary to apply all of these adjustments, it may be necessary to adopt practical accommodations such as limiting the application of the quality-based tax subsidy scheme to large donations or high-income taxpayers.[7] These and other practical accommodations can be incorporated without losing the primary benefits of tying tax subsidies to subsequent contributions, and thereby implicitly compensating donors for costs of identifying giving opportunities.

While it is natural to condition tax deductions on subsequent contributions, the framework of sections 3-4 can be applied to other observable organizational attributes that are associated with costs of contributing. To the extent that fundraising activities reduce the costs that donors incur in making contributions, and possibly augment the warm glow that contributions produce, the model implies that it would be efficient to provide smaller tax benefits for contributions to organizations that engage in extensive fundraising. Charitable organizations are commonly criticized for devoting excessive time and money to fundraising activities. These criticisms emphasize that fundraising efforts are distractions from an organization's exempt purpose, and that there are better and more appropriate uses of its resources. There are calls to deny tax-exempt status from nonprofit organizations that spend too much on fundraising, and

[6] For analysis of the effectiveness of solicitations and fund drives, as well as potential crowd-out, see Andreoni (1998), Okten and Weisbrod (2000), Vesterlund (2003), Andreoni and Payne (2003, 2011), Yörük (2009), Kumru and Vesterlund (2010), Huck and Rasul (2011), Meer and Rosen (2011), Krasteva and Yildirim (2014), and Adena and Huck (2019); Bhati and Hansen (2020) survey the experimental part of this literature.

[7] Another practical (and legal) accommodation would be to limit the quality-based tax subsidy scheme to non-religious donations, which collectively represent somewhat less than half of total U.S. charitable contributions by individuals (List, 2011).

rating outfits that grade such organizations harshly.[8] Whereas these efforts to redirect charitable contributions focus on the activities of organizations that do excessive fundraising, the model in sections 3-4 takes an entirely different approach based on the costs that donors incur. It is noteworthy that these frameworks come to similar places in offering reasons why efficient tax subsidies might be smaller for contributions to organizations doing excessive fundraising.

6. Conclusion

Governments around the world encourage charitable contributions by providing tax benefits for contributors. These tax benefits are functions of amounts contributed, but bear scant if any relation to the impact of contributions, apart from their magnitudes. As a result, current subsidies for charitable contributions reflect only a portion of the individual sacrifices entailed in contributing, and do not attempt to adjust for the social benefits that contributions may bring. These sources of inefficiency reduce the attractiveness of tax subsidies, which may be part of the reason why subsidies are currently so limited in magnitude – and if so, this consideration raises the possibility that governments would offer more generous subsidies if they were differently designed.

While it may be impractical for governments to attempt to assess directly any differences in the worthiness of different charities, it is possible for governments to use observable and market-based indicators of the costs that donors incur. Adjusting tax benefits based on the subsequent contribution experiences of recipient organizations has the potential to improve the efficiency of resource allocation in the nonprofit sector by giving donors stronger incentives to bear the costs associated with identifying high-quality giving opportunities. In addition to focusing donor attention, adoption of such measures might prompt the emergence of an industry of contribution consultants, whose fees would remain nondeductible but whose services nonetheless would be implicitly subsidized by the tax system. In encouraging, systematizing, and possibly even professionalizing the everyday giving experience, governments may find that they improve the efficiency of charitable contributions.

[8] See e.g. Rose-Ackerman (1982), Steinberg (1986), Otken and Weisbrod (2000), Tinkelman (2006), Brown and Slivinski (2006), Simon, Dale, and Chisolm (2006), Harris and Neely (2016), Yörük (2016), Brown, Meer and Williams (2017), and Mayo (2022).

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