

ARTICLE

Do donors value volunteer commitment in assessing nonprofit effectiveness?

Amanda W. Beck¹ | Sarah A. Garven² | Michelle Higgins Yetman³

¹School of Accountancy, Georgia State University, Atlanta, Georgia, USA

²Department of Accounting, Middle Tennessee State University, Murfreesboro, Tennessee, USA

³Graduate School of Management, University of California, Davis, Davis, California, USA

Correspondence

Amanda W. Beck, School of Accountancy, Georgia State University, Atlanta, GA, USA.
Email: abeck@gsu.edu

Abstract

Evaluating organizational effectiveness is a significant challenge for nonprofit donors making donation allocation decisions. Donations may be misallocated if organizational effectiveness is inadequately assessed, and donors, who are often organizational outsiders, rely on nonprofit disclosures on IRS Form 990 to make such assessments. We examine whether donors value volunteer commitment, as measured by the number of volunteers that nonprofits disclose on Form 990, alongside financial and governance disclosures in assessing organizational effectiveness. Donors and volunteers prefer to make respective gifts of money and time to nonprofits that are effective in furthering their missions. Based on the premise that volunteers, as organizational insiders, are better positioned than donors to judge the impact of their contributions, we hypothesize that volunteer commitment provides value-relevant information to donors for use in assessing imprecise effectiveness signals—namely, the program ratio and corporate governance disclosures. Consistent with this, we find that the value relevance of the program ratio and corporate governance disclosures to donors is increasing with the level of volunteer commitment. These results suggest that donors view volunteer commitment as a signal of effectiveness, useful in interpreting other signals of effectiveness. The evidence is more pronounced among nonprofits that report more credible volunteer disclosures, have a larger proportion of sophisticated donors, and are more complex. These findings have implications for regulators considering nonprofit disclosure policies, as well as nonprofit managers and directors engaging volunteers.

KEYWORDS

corporate governance, disclosure, donations, nonprofit, program ratio, volunteerism

Accepted by Peter Clarkson.

Les donateurs accordent-ils de l'importance à l'engagement bénévole dans l'évaluation de l'efficacité des organismes sans but lucratif?

Résumé

L'évaluation de l'efficacité organisationnelle représente un défi important pour les donateurs des organismes sans but lucratif (OSBL) qui doivent prendre des décisions concernant la distribution des dons. Une évaluation inexacte de l'efficacité organisationnelle peut donner lieu à une distribution inadéquate des dons et les donateurs, souvent des partenaires externes de l'organisation, s'appuient sur les informations données par les OSBL sur le formulaire 990 de l'IRS pour réaliser ces évaluations. Les auteures examinent si les donateurs tiennent compte de l'engagement bénévole — mesuré par le nombre de bénévoles déclaré par les OSBL sur le formulaire 990 — en complément des informations données sur la finance et la gouvernance pour évaluer l'efficacité de l'organisation. Les donateurs et les bénévoles préfèrent faire respectivement des dons d'argent et de temps aux OSBL qui sont efficaces dans l'accomplissement de leur mission. Partant du principe que les bénévoles, en tant que partenaires internes de l'organisation, sont mieux placés que les donateurs pour estimer l'impact de leurs contributions, les auteures émettent l'hypothèse que l'engagement bénévole fournit aux donateurs des informations pertinentes en matière de valeur, qu'ils peuvent utiliser pour évaluer des indicateurs imprécis de l'efficacité, à savoir le ratio de programme et les informations données sur la gouvernance d'entreprise. Ainsi, elles constatent que le degré de pertinence de la valeur du ratio de programme et des informations fournies aux donateurs sur la gouvernance d'entreprise augmente en fonction du niveau d'engagement bénévole. Ces résultats suggèrent que les donateurs considèrent l'engagement bénévole comme un indicateur de l'efficacité, utile pour interpréter d'autres indicateurs de l'efficacité. Les données sont plus probantes pour les OSBL qui communiquent des informations crédibles sur le bénévolat, qui comptent un plus grand nombre de donateurs avertis et qui sont plus complexes. Ces résultats fournissent des éclaircissements aux autorités de réglementation étudiant les politiques des OSBL en matière de divulgation, ainsi qu'aux gestionnaires et directeurs d'OSBL faisant appel à des bénévoles.

MOTS-CLÉS

bénévolat, communication d'information, dons, gouvernance d'entreprise, organisations sans but lucratif, ratio de programme

JEL CLASSIFICATION

L30, L31, L38, M40, M41, M48

1 | INTRODUCTION

A fundamental question facing donors when making donation allocation decisions is how to evaluate the effectiveness of nonprofit organizations (hereafter, NPOs). To the extent that donors are unable to evaluate organizational effectiveness adequately, donations are potentially misallocated. Recent estimates suggest that Americans contribute around \$500 billion, or about 2% of US gross domestic product, in monetary charitable donations annually (Giving USA, 2023). In addition, almost a quarter of US adults donate time, contributing an additional \$122.9 billion of economic value (US Census, 2023). The desire to contribute to an NPO's charitable mission motivates both donors and volunteers. Volunteers often have firsthand knowledge of whether an NPO is fulfilling its mission effectively. In contrast, donors frequently use disclosures on IRS Form 990, the primary publicly available financial report, to assess effectiveness. The form was revised in 2008 to enhance transparency and comparability across organizations and provide a "realistic picture of the organization and its operations" (IRS, 2007), including volunteer commitment, which is disclosed on the first page as the number of volunteers. Gellman (2022) highlights that the first page is a key driver of an NPO's impression with the public and that the number of volunteers "speaks volumes about a nonprofit's culture, impact, and outreach." The primary purpose of this study is to determine the extent to which donors find the volunteer disclosure useful alongside financial and governance disclosures in assessing organizational effectiveness in their donation allocation decisions.¹

Assessing the effectiveness of a single NPO is challenging, and comparing effectiveness across multiple NPOs is even more difficult. An ideal measure of effectiveness would be broadly applicable, allowing donors to compare an organization's performance over time and relative to industry peers. However, there is great diversity and heterogeneity across NPOs, making a single measure of effectiveness unlikely. While NPOs vary considerably in their use of volunteer labor, a substantial portion of the overall NPO population utilizes volunteer labor to a significant extent. Compared to other mission-specific metrics that donors could use to assess effectiveness, such as the number of students taught or scholarships awarded, the volunteer disclosure is comparable across NPOs of different types and is broadly available to donors on Form 990.

Charity rating agencies and state regulators suggest that high program ratios correspond to high levels of efficiency and effectiveness. The program ratio, which donors can obtain from Form 990, measures the proportion of total spending on the NPO's mission. However, spending on a mission is *not* a sufficient condition for furthering the mission. In other words, the program ratio does not capture the *impact* of the outlays towards the mission and, therefore, is an imprecise measure of NPO effectiveness.² Despite this, empirical evidence suggests donors consider the program ratio value relevant in donation allocation decisions (Khumawala & Shroff, 2023; Parsons, 2003). In fact, donor reliance on this ratio (or its inverse, the overhead ratio) to judge NPO performance is so widespread that GuideStar, the Better Business Bureau Wise Giving Alliance, and Charity Navigator wrote an open letter to donors imploring them to consider other factors to put an end to the "Overhead Myth" that financial ratios serve as the best indicators of NPO performance.³

Donors also look to corporate governance disclosures on Form 990 to inform effectiveness assessments. Yet, an effective governance system requires *both* the adoption *and* active implementation of strong governance practices. The Form 990 disclosures report *only* the adoption

¹Although the term "donation" can refer to the giving of money or time, we use the term "donation" (and "donor") to refer to the giving of money and "volunteerism" (and "volunteer") to refer to the giving of time.

²Another limitation of the program ratio is that NPOs may intentionally or unintentionally misallocate their expenses across the program, fundraising, and administrative categories (Garven et al., 2016, 2018; Jones & Roberts, 2006; Keating et al., 2008; Khumawala et al., 2005; Krishnan et al., 2006; Tinkelman, 1998). Following prior research, we consider misreporting in our research design (Yetman & Yetman, 2013).

³See <https://web.archive.org/web/20210523210434/http://overheadmyth.com/>.

of governance practices and thus are imprecise measures of effectiveness. Nevertheless, donors still consider them in making donation allocation decisions (Harris et al., 2015).

We examine whether the Form 990 volunteer disclosure provides further clarity to donors in assessing (unobservable) effectiveness. The number of volunteers is widely considered to reflect mission impact by NPOs themselves, charity rating agencies, grant funders, and consulting companies (Funding for Good, 2019; GuideStar, 2024; Harris et al., 2023; Schulz & Wilson, 2017). Extant economic theory suggests that, like donors, volunteers prefer to contribute to NPOs that they believe are effective in delivering the charitable mission.⁴ Bowman (2004) argues that volunteers—being organizational insiders—are subject to less information asymmetry and are better positioned to judge whether their contributions result in a positive impact than are donors, which allows them to develop confidence in the NPO. For example, a volunteer at a soup kitchen is in a better position than a donor to determine if the soup kitchen is run in an organized fashion and if their donation of time is utilized in a way that furthers the NPO's mission of feeding the homeless.

Our hypotheses build on the idea that donors expect volunteers to commit their time to NPOs that are effective in furthering their missions and thus view volunteer commitment as an implicit signal of effectiveness.⁵ Specifically, we hypothesize that volunteer commitment enhances the usefulness of both the program ratio and corporate governance disclosures in assessing effectiveness. These hypotheses build on the theory that when multiple imperfect signals provide a consistent message, precision in the cumulative signal increases (Connelly et al., 2011)—a premise that has broad empirical support in the for-profit accounting literature (e.g., Dhaliwal et al., 2011; Mangena et al., 2016) and recent support in nonprofit accounting literature (Harris & Neely, 2016). This leads us to examine whether interactions of reported volunteers with the program ratio and governance metrics are positively associated with donations.

We regress donations on the number of volunteers, its interactions with the program ratio and a governance index, and control variables using a panel of data from 2011 to 2018. Consistent with our theory, we document that the interactions between the number of volunteers with both the program ratio and the governance index are positively associated with donations. These results vary in predictable ways that are consistent with theory, which corroborates our main results and reduces concerns of bias from omitted variables. We find that donors place more value on volunteer commitment for organizations with a higher degree of credibility underlying the volunteer disclosure, measured by the reporting of an independent audit and the presence of time-series variance in the NPO-level disclosures of volunteers. Given prior evidence that sophisticated donors are more incentivized and better equipped to interpret Form 990 disclosures (Yetman & Yetman, 2013), we expect and find that sophisticated donors, measured with restricted donations, are more responsive to volunteer disclosures. Finally, consistent with the prediction that information asymmetry increases in organizational complexity (Bushman et al., 2004), we find that donors place more value on volunteer commitment for more complex organizations, measured by the number of revenue sources. We employ a variety of procedures to address endogeneity—particularly concerns that gifts of time and money are determined

⁴Economic theories of charitable giving have evolved to accommodate a spectrum of donor and volunteer utility functions, ranging from purely altruistic, to “impure altruism” (Andreoni, 1989), to purely egoistic. We further describe these ideas and extend them to our setting in Section 2.

⁵Like the program ratio and governance disclosures, the volunteer disclosure is an imprecise signal of effectiveness. Imprecision results not only from the nature of the disclosure—that is, the number of volunteers as opposed to hours volunteered—but also concerns about its quality. NPOs are required to report the number of volunteers on Form 990, but the disclosure is not audited, and NPOs that do not keep track of volunteers may provide an estimate. While we acknowledge that signal imprecision could prevent donors from using volunteer disclosures to inform donation decisions, at least two points help alleviate concerns. First, Messamore et al. (2021) find that within-industry distributions of reported volunteers are consistent with ex ante expectations, providing a favorable evaluation of the disclosure's quality. Second, and as noted by Brazel et al. (2009), managers may be less likely to manipulate nonfinancial disclosures due to relatively lower incentives, difficulty in concealing, and ease of verification.

simultaneously by a latent variable—in addition to those embedded in our primary tests, and we find that our results are robust.

Our results have several important implications. First, they reveal an additional signal of perceived organizational effectiveness, notably volunteer commitment. This finding is particularly relevant to the stream of accounting research that examines NPO performance reporting and how stakeholders—especially donors—respond to various reported performance disclosures.

Second, our findings are important to regulators. Mandated disclosure on volunteers commenced with the significant increase in disclosure on the 2008 Form 990, which was controversial, as it was unclear whether the increased disclosure would be relevant to donors (Brody, 2012). In addition, FASB standards require NPOs to disclose contributed services on their financial statements.⁶ Accounting Standards Update No. 2020-07, *Presentation and Disclosures by Not-for-Profit Entities for Contributed Nonfinancial Assets*, highlights the importance of volunteer information and allows NPOs to use nonfinancial information, such as the number of volunteer hours, or financial information, such as the dollar amount of donations raised by volunteers, to describe the nature and extent of services contributed (FASB, 2020). Our results indicate that the disclosed number of volunteers is relevant and suggest that more precise measures of volunteer commitment, such as volunteer hours or average tenure, may be incrementally useful.

Third, the results suggest that managers and directors of NPOs should consider the role that volunteer commitment plays in their quest for donor funding. Specifically, NPOs should consider increasing efforts to recruit and retain volunteers. This may involve, for example, “develop[ing] new and innovative ways to engage more volunteers” (Y. Lee, 2019, p. 218). Finally, as this is among the first large-scale empirical studies to examine the volunteer disclosure from Form 990, we provide detailed volunteer descriptive statistics to help researchers better understand NPOs’ use of volunteers.

2 | THEORY AND HYPOTHESES

2.1 | The role of financial reporting in communicating NPO performance

NPOs are subject to agency problems wherein resource providers’ interests are misaligned with those of management. For example, management may use resources ineffectively towards the charitable mission. Donors are incentivized to monitor the NPO to reduce the potential of agency losses (Hansmann, 1996). In the absence of directly observable indicators of effectiveness, donors search for signals to help resolve uncertainty about an NPOs’ effectiveness (Spence, 1973), including indirect but observable attributes that donors perceive are correlated with effectiveness (Weiss, 1995). Donors’ primary source of financial information is Form 990, which includes disclosures that may assist them in assessing whether the NPO is using resources effectively toward its mission.

2.1.1 | Reporting on program spending

Form 990 requires NPOs to classify expenses across three categories: programs, administrative, and fundraising. The program ratio is the proportion of total expenses directed toward programs and measures efficiency in that it relates to the NPOs’ objective, which is to maximize both revenues and charitable expenses and minimize noncharitable expenses (Hansmann, 1980;

⁶In limited circumstances, GAAP allows recognizing the value of volunteer services as revenues. In accordance with paragraph 958-605-25-16 of Accounting Standards Codification 958, contributed services require recognition if the services create or enhance nonfinancial assets or if they require specialized skills, are provided by someone who possesses those skills, and would typically need to be purchased if not contributed (FASB, 2009). However, the IRS does not permit reporting these amounts as revenues on Form 990.

Rose-Ackerman, 1996). However, the program ratio does have limitations. First, it measures *expenditures* toward the charitable mission but does not capture the *effectiveness* of achieving the mission. As such, it is an imperfect signal of the underlying construct that arguably matters most to stakeholders: charitable impact. An NPO may channel substantial resources toward programs yet be ineffective in accomplishing its mission. Conversely, an NPO may be very effective in achieving its mission yet have high administrative and fundraising costs (Hager et al., 2004).

Second, it measures *reported*, and not necessarily *actual*, program to total expenses. Given the incentive to report higher program ratios, some managers opportunistically allocate more costs toward the program and away from the fundraising and administrative expense categories than what is appropriate (Jones & Roberts, 2006; Keating et al., 2008; Krishnan et al., 2006; Tinkelman, 1998).

Despite these limitations, the program ratio is a common performance benchmark. Charity rating agencies utilize this ratio in their assessments of NPOs, and donors find it value relevant in their donation allocation decisions (see Khumawala & Shroff, 2023, and Parsons, 2003, for a summary of prior research). Further, research documents that donors discount low-quality program ratios, including those that are likely overstated through cost-shifting (Yetman & Yetman, 2013).

2.1.2 | Reporting on corporate governance

Harris et al. (2015) define nonprofit corporate governance as “the set of internal and external mechanisms designed to ensure that managers are working to fulfill their organization’s charitable mission and fiduciary responsibilities and, in turn, to minimize the misuse of charitable assets” (p. 580). Strong governance supports the effective use of resources to further the charitable mission. Form 990 disclosures provide donors with information on whether an NPO has adopted various governance policies and practices. However, the *adoption* of a policy or practice does not necessarily correspond to the effective *implementation* of the policy or practice. For example, the existence of a whistleblower policy does not necessarily correspond to a whistleblower system operating effectively (G. Lee & Fargher, 2013). As Harris et al. (2017) argue, “the lack of business and financial expertise, the reliance on volunteer boards, the vague legal regime, and the limited resources available for financial management in NPOs may result in the ineffective implementation of governance policies” (p. 154). The legal regime for NPOs has been described as “laissez-faire,” in that there is inadequate guidance on the functions of the board, which can result in weak governance (Brody, 2007). The high costs of applying governance policies effectively may lead managers, founders, or executive directors to undermine or bypass the policies altogether. As a result of these various factors, corporate governance disclosures also provide imperfect signals of effectiveness. Nevertheless, donors find the disclosures value relevant in making donation allocation decisions (Harris et al., 2015).

2.2 | Reporting on volunteerism

In 2008, the United States began requiring NPOs to disclose the number of volunteers utilized during a reporting period on Form 990. To our knowledge, prior empirical research has not examined whether this disclosure is useful to donors in making donation allocation decisions. We examine the extent to which donors perceive the volunteer disclosure, in conjunction with the program ratio and governance disclosures, as useful in assessing NPO effectiveness.

2.3 | Incentives to volunteer

Why do people give their time to charity? Economists have offered various theories, ranging from pure altruism to pure egoism. Under pure altruism, a volunteer's sole motivation is to provide a benefit to someone besides themselves, and that benefit is the public good of charity. On the other side of the spectrum, under pure egoism, a volunteer's sole motivation is receiving a private good for themselves, such as personal development, praise, or visibility; this private good is commonly referred to as "clubbiness" (Bowman, 2004; Young, 1987). Giving to provide public goods drives altruists or altruistic behavior, whereas giving to receive private goods drives egoists or egoistic behavior. While economists acknowledge that there may be some volunteers who are motivated either by pure altruism or pure egoism, most are motivated by a combination of altruism and egoism (Andreoni, 1989; Bowman, 2004; Smith, 1994).

Andreoni (1989) developed an economic model to explain charitable giving of money based on both altruistic and egoistic motives, which he termed "impure altruism" or "warm glow." Bowman (2004) builds upon Andreoni's "giving of money" model by expanding it into the "giving of time" setting. Bowman begins with the basic premise that volunteers, like donors, derive utility from both altruistic and egoistic motives. He then introduces volunteer confidence about the NPO into the model, arguing that, unlike donors, volunteers can assess an NPO's effectiveness through private information channels available to them as insiders of the organization, such as gossip, memos, bulletin boards, newsletters, and personal observation. His model predicts that, for volunteers deriving at least some utility for providing a public good, the motivation to volunteer is positively associated with confidence in the NPO. Bowman (2004) argues that a "rational altruist infers that the effort she might expend as a volunteer would be wasted [if the NPO was not effective in delivering the public good]. Because rational people do not want to waste time, even pure altruists would withhold their services if they lacked confidence that their work would actually produce the public good they value" (pp. 251–252). Based on this model, Bowman (2004) hypothesizes and finds survey-based evidence to support a lower rate of volunteerism within the group of low-confidence individuals.⁷ Consistent with Bowman's theory, theoretical research has argued and survey research has found that volunteers care about whether an NPO is effective in achieving its goals and that failure or difficulties in the organization's effectiveness in achieving its goals results in a reduced commitment by the volunteer (Grube & Piliavin, 2000; Nesbit et al., 2018; Vantilborgh et al., 2011; Vecina et al., 2013).

2.4 | Donors' response to volunteerism

Traditional economic theory views volunteering and donating as substitutes based on the rationale that individuals must allocate limited time between earning money, which can then be donated, and volunteering (Yao, 2015). Thus, "those with more money but less time donate money and those with less money but more time donate time" (Yao, 2015, p. 4). Yet, survey (Brown & Lankford, 1992) and empirical (Callen, 1994; Menchik & Weisbrod, 1987; Ressler et al., 2021) research find evidence of a complementary relationship. Most closely related to our study, Callen (1994) finds some evidence of a net complementary relationship between gifts of time and money using a small sample of healthcare-focused NPOs from 1986 to 1987, which is prior to the requirement for US charities to disclose volunteer data, but ultimately concludes that "whether donations of money are complementary to or independent of donations of time ultimately depends upon the particular assumed model" (p. 225).

⁷Bekkers and Bowman (2009) build upon Bowman (2004) and conclude that volunteerism is driven by social trust and altruistic values, rather than charitable confidence, theoretically implying that "volunteering is symbolic rather than instrumental" (p. 884). Regardless of volunteers' actual motivation, what is required in our theory is that donors *perceive* volunteerism to be associated with charitable effectiveness.

One explanation to support a complementary relationship is that volunteer commitment serves as a signal to donors of organizational effectiveness, consistent with the theoretical model of charitable giving and the demand for financial reporting presented by Gordon and Khumawala (1999). They posit that volunteers develop trust in the NPO through their direct involvement, reducing volunteers' demand for financial reporting relative to donors'. They state, "[T]he active involvement of volunteers can be interpreted as a signal that the charity is doing good things and doing them effectively" (Gordon & Khumawala, 1999, pp. 51–52). Consistent with this notion, Wong and Ortmann (2016) argue in another theoretical study that donors use "rules of thumb" to assess charity effectiveness in giving decisions, including how many people volunteer at the charity. A survey study by Herman and Heimovics (1994) finds that US subjects consider volunteerism to be one of the most important determinants of organizational effectiveness.

We contribute to the literature by empirically examining whether volunteer commitment serves as a signal to donors of organizational effectiveness. We achieve this by considering how disclosures of volunteers enhance the usefulness of imprecise effectiveness measures to donors of money. The opposing theories about whether individuals choose between donations of time or money versus donating *both* time and money to organizations suggest that the unconditional effect of volunteers on donations may be positive or negative or compete such that the net effect is insignificant. Irrespective of whether the relationship between time and money donations is complementary or substitutional *on average*, we expect that if donors view volunteers as signals of organizational effectiveness, volunteer commitment increases the value relevance of other effectiveness measures. Examining interactions of volunteerism with program ratio and governance disclosures enables us to isolate the theory that volunteerism provides a positive signal to donors about organizational effectiveness.

2.5 | Hypotheses

We consider whether the Form 990 volunteer disclosure signals effectiveness, enhancing the usefulness of the program ratio and governance disclosures in donation decisions. Importantly, we do *not* posit that volunteers have control over spending on program services or that they verify the reporting quality of the Form 990 disclosures. Rather, if donors perceive that volunteer commitment provides a signal of effectiveness that is consistent with other metrics, then precision and thereby donor confidence in the cumulative signal increases (Connelly et al., 2011). In other words, we expect that the disclosure of volunteer commitment amplifies the usefulness of other effectiveness signals.

As previously discussed, program ratios and governance disclosures are imperfect signals of effectiveness. Models in the for-profit literature provide theory on stakeholder responses to noisy disclosures (Verrecchia, 2001). These models utilize settings whereby a disclosure is provided to investors, who in turn update their priors and react to new information. Investors' reactions depend not only on the information itself but also on its precision. Investors behave rationally by discounting noisy disclosures and placing a premium on informative disclosures (Dye & Sridhar, 2007). Signaling and screening theories provide additional rationale for the expectation that aggregate signal precision increases when multiple pieces of information communicate a consistent message about the same unobservable quality (e.g., Connelly et al., 2011; Spence, 1973; Weiss, 1995). Based on this, we argue that the volunteer disclosure, alongside the program ratio and governance disclosures, provides donors with a more precise evaluation of effectiveness than these measures alone. This leads us to our hypotheses, stated in the alternative form:

Hypothesis 1 (H1). Donors place a premium on the program ratios of NPOs with higher levels of volunteer commitment when making donation allocations.

Hypothesis 2 (H2). Donors place a premium on the governance disclosures of NPOs with higher levels of volunteer commitment when making donation allocations.

The idea that donors might view volunteer commitment as value relevant to their donation decisions is not without tension. Prior research finds that not all donors care about organizational performance, suggesting that effectiveness signals, such as volunteer commitment, are irrelevant. For example, Parsons (2007) notes that although organizational quality can play a role in the decision to donate, many reasons for donating, such as to please peers, do not involve searching for evidence that the NPO uses contributed resources effectively. Alternatively, donors may believe that volunteers are not informed about the effectiveness of an NPO's operations or that volunteers' commitment to an NPO is driven by private benefits, such as "clubbiness," and not by confidence in the NPOs' effectiveness. It is also possible that the Form 990 disclosure, that is, the number of volunteers, is too imprecise to resolve donors' uncertainty about effectiveness because it does not measure commitment in terms of time, such as the number of hours, or the significance of the work. Thus, whether volunteerism signals organizational effectiveness is an empirical question.

2.6 | Cross-sectional differences in the value relevance of volunteerism

We exploit differences across NPOs that suggest variation in our hypotheses' predictions, which help to corroborate our main results and rule out spurious relationships. If donors consider volunteerism when assessing organizational effectiveness, then our theory and prior research suggest predictable cross-sectional variation in the effect. First, we examine the differences in the credibility of the volunteer disclosure. Prior for-profit accounting research examines disclosure credibility and related constructs, such as "inherent plausibility" (Jennings, 1987; Mercer, 2004, p. 187; Williams, 1996) and financial reporting governance, including assurance provided by auditors (e.g., Blackwell et al., 1998; Hodge, 2001). Although disclosures include potentially valuable information, investors will only rely upon those they perceive as credible (Mercer, 2004). Evidence that donors discount disclosures when reported fundraising expenses are implausibly zero (Yetman & Yetman, 2013) and when audit quality is low (Kitching, 2009) suggests that they perceive such disclosures as less credible. Consistent with this and extant signaling theory literature (Connelly et al., 2011), we predict that more credible volunteer disclosures provide a stronger signal of effectiveness and are more value relevant to donors.

Second, we examine differences across donor sophistication. Gordon and Khumawala (1999) argue that donors' demand for NPO financial disclosures varies depending on the circumstances and motivations surrounding their donation decision. They conjecture that the demand for financial information increases with the donation size. Small donations are often supported by a simple decision process, such as utilizing metrics provided in direct-mail or telemarketing campaigns or by charity rating agencies. While the program ratio and governance disclosures are relatively easy for a donor to observe from these sources, judging the quality of these disclosures requires incremental search costs. Larger donors are more likely to incur these costs, thus indicating a higher degree of sophistication (Yetman & Yetman, 2013). We expect that more sophisticated donors consider volunteer commitment in evaluating the program ratio and governance disclosures to a greater extent.

Finally, we examine differences across organizational complexity. Organizations with complex operations are characterized by a higher degree of information asymmetry and an increased demand for multiple information signals (Bushman et al., 2004). We predict that donors of NPOs with more complex operations seek to resolve higher levels of information asymmetry and thus consider volunteer commitment more relevant when evaluating the program ratio and governance disclosures.

3 | RESEARCH DESIGN

3.1 | Empirical model

We test our hypotheses by expanding the donor demand model first developed by Weisbrod and Dominguez (1986) and extended in other academic research on economics and accounting.⁸

$$\begin{aligned} \text{Donations}_t = & \alpha_0 + \beta_1 \text{Volunteers}_{i,t-1} + \beta_2 \text{Volunteers} \times \text{ProgRat}_{i,t-1} + \beta_3 \text{Volunteers} \times \text{GenGov}_{i,t-1} \\ & + \beta_4 \text{ProgRat}_{i,t-1} + \beta_5 \text{GenGov}_{i,t-1} + \beta_k \text{Controls} + \varepsilon_{it}. \end{aligned} \quad (1)$$

Donations_t is private donations. We add our measure of volunteer commitment (*Volunteers*), which is the number of volunteers disclosed on Form 990. Noting that the unconditional effect of *Volunteers* has no bearing on our expectations that the volunteer disclosure enhances the value of other effectiveness disclosures, we focus on interactions of volunteers with both the program ratio (*Volunteers* × *ProgRat*) and governance (*Volunteers* × *GenGov*). *ProgRat* is measured as program expenses divided by total expenses, and *GenGov* is a governance index ranging from zero (*weak governance*) to five (*strong governance*) that increases by one for each of the principal governance factors identified by Boland et al. (2020).⁹ The coefficients on the two *Volunteers* interaction terms represent volunteerism's incremental effects on donors' perceptions of the program ratio (H1) and governance (H2), with positive coefficients supporting the hypotheses.

ProgRat and *GenGov* may retain individual informativeness, as documented by prior research (Harris et al., 2015; Khumawala & Shroff, 2023). Our focus, however, is on the extent to which *Volunteers* influences how donors interpret the program ratio and governance disclosures. Focusing on interactions of volunteer commitment with program ratios and corporate governance provides a more rigorous test of our theory that donors use volunteer disclosures to formulate a more holistic understanding of organizational effectiveness, increasing the overall precision of these assessments. Also, though we do not formally hypothesize on the main effect of *Volunteers*, note that a positive coefficient is consistent with Callen's (1994) finding that gifts of time and money are complements.

Controls is a vector of k control variables following extant research that predicts donations. We control for misreporting using *LowQuality*, which is equal to one if the NPO reports \$0 fundraising expense, and zero otherwise.¹⁰ Yetman and Yetman (2013) find that donors discount program ratios for NPOs that report no fundraising expenses (*ProgRat* × *LowQuality*). We also include fundraising expenses (*Fundraising*), number of years the NPO has been tax-exempt (*Age*), size (*Assets*), donations from feeder organizations (*FeedDon*), and self-generated income, which includes revenues from sales and services (*SalesRev*), government funding (*GovGrants*), membership dues (*Dues*), and investments (*InvestRev*).

We control for NPOs that report total officer pay of \$0 (*ZeroOffPay* equal to one, and zero otherwise), which denotes that volunteers hold the key management positions of the organization.

⁸We use a levels model with logarithmic variable transformations, controlling for lagged donations and size, because (1) it is the standard approach in empirical studies of donations (Khumawala & Shroff, 2023); (2) prior nonprofit research notes that changes models are more sensitive to one-time errors and are less robust than levels models (Tinkelman, 1999; Tinkelman & Neely, 2011); (3) 54% (28.7%) of our sample observations have no change in *GenGov* (*Volunteers*) from t to $t + 1$, significantly reducing the statistical power of a changes model; and (4) our variables of interest are interaction terms, exacerbating concerns related to these points and to interpretation of coefficients. Untabulated tests using a changes model support our hypotheses, although results of several of the control variables are inconsistent with expectations, consistent with the concerns mentioned above.

⁹The factors include the presence of an audit committee, a board comprised of over 50% independent members, no management functions delegated to outside entities, the existence of policies to review and approve CEO compensation, and the disclosure of applicable forms to the NPO's website.

¹⁰We limit our sample to organizations that report more than \$100,000 or 10% of revenues in donations as well as organizations not classified as philanthropy and auxiliary and that do not file group returns; these organizations should plausibly be reporting some fundraising expense.

We include *ZeroOffPay* because the theoretical predictions of volunteers on donations differ between volunteers who hold key management positions and those who do not. Theory suggests and prior empirical research finds that *ZeroOffPay* is associated with lower donations, consistent with officer pay indicating a higher degree of managerial professionalism and quality (Harris & Neely, 2021; Neely & Trussel, 2015; Yetman & Yetman, 2013). In contrast, our hypotheses apply to volunteer labor more generally, not upper management specifically. Given concerns about the professionalism of volunteer management, we argue that *ZeroOffPay* does not send a clear signal to donors about effectiveness. *Volunteers* likely includes key officers who are volunteers, but we lack data on the number of unpaid officers to subtract from total *Volunteers*; however, intuitively we expect there to be relatively few unpaid officers compared to the entire volunteer workforce.

Consistent with Yetman and Yetman (2013), we include three additional controls for managerial and reporting sophistication: *Small* is equal to one for NPOs with less than \$1 million in assets, and zero otherwise. *Audit* is equal to one when the NPO reports obtaining an independent audit, and zero otherwise. *CashBasis* is equal to one when the NPO prepares its financial statements using the cash basis, and zero otherwise. We also include year and industry fixed effects.

We measure all variables using natural logs, except for *GenGov* and the indicator variables, resetting values as zero or negative when appropriate. Detailed variable definitions are provided in the Appendix. We cluster standard errors by NPO and mitigate the influence of outliers by eliminating observations with a Cook's *D* greater than $4/n$.

3.2 | Cross-sectional differences in the value relevance of volunteerism

To examine whether the value relevance of volunteerism differs cross-sectionally as our theory predicts, we partition the sample into groups, estimate Model (1) in each group, and test whether the coefficients on *Volunteers* × *ProgRat* and *Volunteers* × *GenGov* are significantly different between the groups using a chi-square test. Our theory predicts larger interaction coefficients when disclosures are more credible, donors are more sophisticated, and organizations are more complex.¹¹

We measure credibility in two ways. First, we partition the sample across financial reporting governance based on whether the NPO undergoes a financial statement audit at time $t - 1$, the year that financial disclosures are measured in Model (1). NPOs with audited financial statements are assumed to have more credible disclosures on Form 990.¹² Our partitioning variable, *Credibility_{Audit}*, is set to high (low) if *Audit* is equal to one (zero). The partitioning on *Audit* precludes its inclusion as a Model (1) control variable. Second, we partition the sample to determine whether the NPOs have time-series variance in reported volunteers. We expect the average donor to presume that having zero variation in volunteers is implausible and thus indicative of a less credible volunteer disclosure. Our partitioning variable, *Credibility_{VolsVary}*, is set to high (low) if the organizational level standard deviation of *Volunteers* reported over the time series (*VolsVary*) is greater than (equal to) zero.^{13,14}

Previous research uses the amount of donor-restricted donations reported as restricted net assets as a proxy for the influence of sophisticated donors (e.g., Parsons et al., 2017; Yetman & Yetman, 2013). We partition across donor sophistication in two ways. First, *RestDon_{Pos}* is set to high (low) if restricted net assets are positive (zero) at time t , which presumes that NPOs without

¹¹As a robustness test (untabulated), we use three-way interactions instead of comparing sample partitions to consider cross-sectional differences in our hypotheses and find similar results.

¹²For example, Pollak et al. (2001) find that NPOs with audited financial statements often used the same audit firm to prepare their Form 990s.

¹³Categorizing volunteer disclosures as having “high credibility” based on having audited financial statements or variation in volunteers could result in measurement error, wherein some NPOs with credible disclosures are miscategorized as having low credibility, and vice versa. Yetman and Yetman (2013) discuss similar concerns in categorizing program ratios as high- or low-quality based on having zero reported fundraising expenses, noting that such misclassification biases against finding statistically significant results.

¹⁴We find similar results when we use *LowQuality* = 0 to measure *Credibility* (untabulated).

restricted net assets have few, if any, sophisticated donors. Second, $RestDon_{Med}$ is set to high (low) if the proportion of net assets with donor restrictions ($RestDon/NA$) is above (at or below) the median at time t .

Petrovits et al. (2011) note that NPOs with multiple funding sources tend to engage in more types of programs and more varied operations, increasing their complexity relative to NPOs with only one funding source. Following this and other research (Harris et al., 2017; Saxton & Neely, 2019), we measure organizational complexity as the number of revenue sources that are reported as earned on Form 990 at time t . Those sources include revenue from sales, donor contributions, investments, federated campaigns, member dues, fundraising, related organizations, government grants, and other. The resulting variable, *Complexity*, ranges from 1 (*not complex*) to 9 (*very complex*). Since about a quarter of our sample has *Complexity* equal to the median, we partition the sample across three groups: below, at, and above the median of *Complexity*.

3.3 | Sample

We utilize a customized data set provided by Applied Nonprofit Research, a data consulting service that uses automated data extraction to compile, clean, and organize Form 990 data for research purposes.¹⁵ The data set contains all NPOs that filed Form 990s electronically from 2010 to 2018. Consistent with prior research, we omit philanthropy and auxiliary organizations and NPOs that file group returns (Garven et al., 2018; Yetman & Yetman, 2012). After these screens, the initial data set is comprised of 1,274,996 observations across 267,939 unique NPOs.

Next, we omit 109,747 observations with obvious errors, such as program ratios greater than 100% and/or no human resources (i.e., both zero volunteers and employees); 202,569 observations without one lag year of data required for estimating Model (1), which includes all year 2010 observations; and 668,359 observations with missing Model (1) variables. Finally, we omit 121,103 observations that report less than \$100,000 or 10% of revenues in donations to identify NPOs with significant reliance on donations and whose donors are likely to respond to Form 990 disclosures (Yetman & Yetman, 2013).¹⁶ The resulting sample consists of 173,218 observations representing 57,995 NPOs. Subsequent sample sizes fluctuate due to omitting outliers based on Cook's D greater than $4/n$.

4 | RESULTS

4.1 | Descriptive statistics

Table 1, Panel A, provides descriptive statistics for the raw (unlogged) variables for our sample.¹⁷ Mean (median) donations are approximately \$3.143 million (\$473,798), and the mean (median)

¹⁵We perform additional cleaning procedures to prepare the data for our analyses as follows. We set missing values to zero if other reported amounts support a value of zero. For example, if certain itemized expenses on Form 990 are missing, but the total expenses reported match the sum of nonmissing itemized expenses, we replace missing itemized expenses with \$0. Similarly, some NPOs erroneously report expenses and liabilities as negative numbers. We reset negative numbers to be positive if other reported amounts support the change. For example, if an NPO reports assets of \$100, liabilities of -\$25, and net assets of \$75, we change liabilities to +\$25. We do not change missing volunteers to zero because there are no check figures elsewhere in Form 990 that we can use to validate the change. After applying the initial screens, we find that approximately 20% of observations are missing volunteer data. However, subsequent sample screens or data requirements eliminate the vast majority of these observations from our hypothesis tests. To ensure that this choice does not materially affect our results, we test our hypotheses replacing missing volunteers with zeros and find that our conclusions are unaffected.

¹⁶This screen eliminates "commercial" NPOs, which are those with over 90% revenues from programs (Aggarwal et al., 2012).

¹⁷Sample size is slightly smaller when considering donor sophistication based on $RestDon/NA$ because net assets must be positive for this measure to be meaningful in capturing the proportion of net assets that are restricted.

TABLE 1 Descriptive statistics of raw (i.e., unlogged) variables.

Panel A: Descriptive statistics for Model (1) variables and partitioning variables						
Variable	N	Mean	SD	Q1	Median	Q3
<i>Donations_t</i>	173,218	3,143,464	26,105,097	225,517	473,798	1,331,124
<i>Volunteers_{t-1}</i>	173,218	2,359	163,936	15	58	225
<i>UVolunteers_{t-1}</i>	173,218	0.070	1.930	-0.962	0.227	1.303
<i>ProgRat_{t-1}</i>	173,218	0.799	0.151	0.743	0.824	0.893
<i>GenGov_{t-1}</i>	173,218	3.347	1.036	3.000	4.000	4.000
<i>LowQuality_{t-1}</i>	173,218	0.246	0.431	0.000	0.000	0.000
<i>Fundraising_{t-1}</i>	173,218	310,396	2,640,392	192	29,566	131,521
<i>Age_{t-1}</i>	173,218	27.594	19.838	12.005	23.266	38.855
<i>SalesRev_{t-1}</i>	173,218	3,061,476	47,456,476	0	63,287	511,693
<i>GovGrants_{t-1}</i>	173,218	1,083,239	16,544,539	0	0	126,014
<i>Dues_{t-1}</i>	173,218	47,782	657,633	0	0	0
<i>InvestRev_{t-1}</i>	173,218	718,126	20,896,481	50	1,592	32,277
<i>FeedDon_{t-1}</i>	173,218	26,493	745,222	0	0	0
<i>Assets_{t-1}</i>	173,218	25,088,116	545,726,444	344,987	1,208,007	4,908,175
<i>ZeroOffPay_{t-1}</i>	173,218	0.287	0.453	0.000	0.000	1.000
<i>Small_{t-1}</i>	173,218	0.444	0.497	0.000	0.000	1.000
<i>Audit_{t-1}</i>	173,218	0.656	0.475	0.000	1.000	1.000
<i>CashBasis_{t-1}</i>	173,218	0.179	0.383	0.000	0.000	0.000
<i>VolsVary</i>	173,218	0.808	0.394	1.000	1.000	1.000
<i>RestDon/NA_t</i>	150,314	0.226	0.277	0.000	0.099	0.383
<i>Complexity_t</i>	173,218	4.156	1.465	3.000	4.000	5.000
Panel B: Descriptive statistics for <i>Volunteers</i> by partitions						
Partition	N	Mean	SD	Q1	Median	Q3
<i>Education</i>	21,187	420	6,153	10	49	150
<i>Health</i>	19,589	11,762	466,931	12	50	190
<i>Charitable</i>	132,442	1,278	53,691	15	63	250
Major industries in <i>Charitable</i> partition:						
<i>Arts/Cult./Hum.</i>	24,029	281	3,863	21	70	200
<i>Environ./Animals</i>	13,582	1,508	40,435	20	80	298
<i>Human Services</i>	60,666	1,663	72,467	22	100	370
<i>Intl. Affairs</i>	6,404	2,043	27,642	8	25	100
<i>Public/Soc. Benefit</i>	15,063	1,408	47,617	8	30	145
<i>Religion</i>	11,625	377	4,561	6	24	100
<i>Mutual Benefit</i>	392	5,732	57,549	5	25	117
<i>Unknown</i>	681	374	2,970	8	30	100
<i>Size(Assets): Q1</i>	43,315	849	81,701	10	33	114
<i>Size(Assets): Q2</i>	43,299	394	12,871	12	50	150
<i>Size(Assets): Q3</i>	43,308	829	30,048	16	72	250
<i>Size(Assets): Q4</i>	43,296	7,365	315,821	26	141	520
<i>Age: Q1</i>	43,347	1,228	85,742	7	26	100

(Continues)

TABLE 1 (Continued)

Panel B: Descriptive statistics for <i>Volunteers</i> by partitions						
Partition	N	Mean	SD	Q1	Median	Q3
Age: Q2	43,395	676	21,598	12	50	183
Age: Q3	43,229	1,594	41,033	20	81	290
Age: Q4	43,247	5,945	313,222	27	110	400
Panel C: Descriptive statistics for <i>Volunteers</i> to total workers by industry						
Partition	N	Mean	SD	Q1	Median	Q3
Education	21,187	0.54	0.37	0.18	0.57	0.91
Health	19,589	0.68	0.36	0.41	0.86	0.97
Charitable	132,442	0.71	0.33	0.53	0.85	0.97
Major industries in <i>Charitable</i> partition:						
Arts/Cult./Hum.	24,029	0.68	0.32	0.49	0.79	0.94
Environ./Animals	13,582	0.75	0.30	0.66	0.88	0.97
Human Services	60,666	0.72	0.33	0.55	0.86	0.97
Intl. Affairs	6,404	0.72	0.35	0.55	0.90	0.99
Public/Soc. Benefit	15,063	0.67	0.37	0.40	0.86	0.98
Religion	11,625	0.70	0.35	0.50	0.86	0.98
Mutual Benefit	392	0.70	0.40	0.37	0.94	1.00
Unknown	681	0.73	0.34	0.57	0.89	0.99

Note: Panel A provides descriptive statistics for the raw values of variables used to estimate Model (1) over the sample period measured by t as 2011–2018 (1 year is dropped from the time t sample period of 2010–2018 due to lagged control variables). Panel B provides descriptive statistics by various partitions for *Volunteers*. Panel C provides descriptive statistics by industry for the distribution of volunteers to total workers (*Volunteers/Volunteers + Employees*), where *Employees* is equal to the number of employees from Part I, line 5 of Form 990. *Education* includes organizations such as private primary and secondary schools, institutions of higher education, and alumni associations (NTEE Code = B). *Health* includes organizations in the medical field (NTEE Code = E, F, G, or H). *Charitable* includes all remaining organizations. *Arts/Cult./Hum.* includes nonprofits classified in NTEE Code = A. *Education* includes nonprofits classified in NTEE Code = B. *Environ./Animals* includes nonprofits classified as NTEE Code = C or D. *Health* includes nonprofits classified as NTEE Code = E, F, G, or H. *Human Services* includes nonprofits classified as NTEE Code = I, J, K, L, M, N, O, or P. *Intl. Affairs* includes nonprofits classified as NTEE Code = Q. *Public/Soc. Benefit* includes nonprofits classified as NTEE Code = R, S, T, U, V, or W. *Religion* includes nonprofits classified as NTEE Code = X. *Mutual Benefit* includes nonprofits classified as NTEE Code = Y. *Unknown* includes nonprofits classified as NTEE Code = Z. See the Appendix for all other variable definitions.

number of volunteers (*Volunteers*) is 2,359 (58).^{18,19} Mean *ProgRat* suggests that around 80% of the average NPOs' expenditures are spent on programs, and 25% of our sample does not report fundraising expenses. The average NPO reports implementing 3.3 of the five metrics in the *GenGov* governance index. Variation in the number of volunteers reported during the sample period occurs in 81% of the sample (*VolsVary*) and 66% report obtaining an independent audit. The mean (median) proportion of net assets with donor restrictions is 23% (10%) (*RestDon/NA*). The number of revenue sources (*Complexity*) has a mean (median) equal to 4.2 (4).

As the volunteer disclosure on Form 990 is relatively new, we provide descriptive statistics by various partitions for the *Volunteers* variable in Table 1, Panel B. Using the 10 "major" industry categorizations defined by the National Taxonomy of Exempt Entities (NTEE), we

¹⁸Mean volunteers of 2,359 is in line with prior studies (Y. Lee, 2019; Ressler et al., 2021).

¹⁹Observations with zero reported volunteers comprise 9.9% of our sample. In untabulated results, we estimate Model (1) omitting organizations that do not report volunteers and continue to find positive coefficients on *Volunteers*×*ProgRat* and *Volunteers*×*GenGov*. We also obtain consistent results when estimating Model (1) on a matched sample where we match observations with zero volunteers to observations with positive volunteers based on industry, year, and closest distance, based on Mahalanobis distance, in *Assets*, *ProgRat*, and *GenGov*.

partition the sample into three groups: education and health, which are both generally considered NPOs that serve private beneficiaries, and all others, which are collectively referred to as “charitable” industries that serve the public more generally. We then further partition the “charitable” group into the eight NTEE-defined industries that comprise it. To shed light on how organizations vary in the ratio of volunteers to paid employees, Table 1, Panel C, shows the distribution of volunteers to total workers, calculated as $Volunteers/(Volunteers + Employees)$.

4.2 | Correlations

Table 2 provides a correlation matrix. *Volunteers* is positively correlated with *Donations* at 0.22, *ProgRat* at 0.05, and *GenGov* at 0.27. In comparison, *Donations* is correlated with *ProgRat* at 0.07 and *GenGov* at 0.41. Correlations of both *ProgRat* and *GenGov* with *Volunteers* are lower than with *Donations*, consistent with volunteers relying more on inside knowledge, and donors relying more on external disclosures. Volunteer interaction variables ($Volunteers \times ProgRat$ and $Volunteers \times GenGov$) are positively and significantly associated with donations (0.23 and 0.37, respectively). Other correlations are consistent with prior research.

The volunteer interaction terms used to test our hypotheses are highly correlated with one another (0.88) and with *Volunteers* (at least 0.89). To reduce multicollinearity in our tests and to facilitate the interpretation of the coefficients, we center continuous variables at the sample, or subsample when partitioning, mean and center the governance index variable (*GenGov*) at the median of four, which reduces the maximum variance inflation factors for our variables of interest in Model (1) from over 100 to less than two. This adjustment has no effect on the interaction coefficients that we use to test our hypotheses. The *Volunteers* coefficient in Model (1) can thus be interpreted as the association with donations when *ProgRat* (*GenGov*) is held constant at the sample mean (median).

4.3 | Value relevance of volunteerism

We test H1 and H2 using Model (1). We first present the results of the standard donations model from prior research in Column 1 of Table 3, Panel A. We augment this model to consider the unconditional effect of *Volunteers* in Column 2. We find that *Volunteers* is positively associated with *Donations* ($p < 0.01$), which is consistent with Callen (1994) and suggests a complementary effect between giving of time and money. Finally, we add *Volunteers* and its interactions with *ProgRat* and *GenGov* to present the full expression of Model (1) in Column 3. Consistent with H1, which predicts that donors place extra emphasis on the program ratios of NPOs with high levels of volunteer commitment, we find a positive coefficient on the interaction between *Volunteers* and *ProgRat* ($p < 0.01$). Consistent with H2, which predicts that donors place extra emphasis on the governance of NPOs with high levels of volunteer commitment, we find a positive coefficient on the interaction with *Volunteers* and *GenGov* ($p < 0.01$).

Next, we consider a potential mechanical relationship between volunteers and paid workers. If volunteers substitute for paid workers, and their activities are disproportionately allocated across program, administration, and fundraising activities, this raises the concern that volunteers mechanically affect the program ratio through reallocation of compensation expenses. To alleviate concerns that a mechanical relationship drives our results, we divide the program ratio into two portions—compensation-related and non-compensation-related—for a subsample of observations for which data are available.²⁰ The compensation-related program ratio is the sum

²⁰Our primary data set comes from Amazon Web Services (AWS) but was collected, cleaned, and processed specifically for our study by an independent contractor; the primary data set did not include the compensation fields. For this robustness test, we subsequently collected the compensation field directly from Employer Identification Number (AWS). After matching on EIN and fiscal year and requiring the compensation fields to be populated by expense category, the resulting subsample for this analysis is 96,395, which is reduced to 91,358 after omitting observations with Cook's D greater than $4/n$.

TABLE 2 Pearson correlations.

Variable	1	2	3	4	5	6	7	8	9	10	11	12
1 Donations _t	1.00											
2 Volunteers _{t-1}	0.22	1.00										
3 ProgRat _{t-1}	0.07	0.05	1.00									
4 GenGov _{t-1}	0.41	0.27	0.06	1.00								
5 (Volunteers×ProgRat) _{t-1}	0.23	0.99	0.19	0.27	1.00							
6 (Volunteers×GenGov) _{t-1}	0.37	0.89	0.06	0.61	0.88	1.00						
7 (ProgRat×GenGov) _{t-1}	0.41	0.27	0.29	0.97	0.31	0.60	1.00					
8 LowQuality _{t-1}	-0.23	-0.21	-0.04	-0.36	-0.22	-0.31	-0.35	1.00				
9 Fundraising _{t-1}	0.43	0.27	0.02	0.46	0.27	0.40	0.44	-0.94	1.00			
10 Age _{t-1}	0.21	0.22	0.03	0.33	0.22	0.31	0.32	-0.17	0.24	1.00		
11 SalesRev _{t-1}	0.23	0.15	0.05	0.27	0.15	0.22	0.27	-0.16	0.24	0.33	1.00	
12 GovGrants _{t-1}	0.19	0.14	0.08	0.29	0.15	0.23	0.30	-0.13	0.18	0.22	0.19	1.00
13 FeedDon _{t-1}	0.12	0.21	0.06	0.22	0.22	0.28	0.23	-0.13	0.16	0.19	0.09	0.19
14 Assets _{t-1}	0.65	0.24	0.02	0.45	0.23	0.38	0.44	-0.24	0.41	0.45	0.41	0.25
15 ZeroOffPay _{t-1}	-0.24	-0.10	-0.02	-0.35	-0.10	-0.23	-0.34	0.25	-0.31	-0.15	-0.21	-0.17
16 Small _{t-1}	-0.49	-0.19	-0.01	-0.38	-0.18	-0.31	-0.36	0.19	-0.31	-0.37	-0.32	-0.19
17 Audit _{t-1}	0.40	0.17	0.06	0.61	0.18	0.38	0.60	-0.28	0.38	0.30	0.24	0.30
18 CashBasis _{t-1}	-0.27	-0.12	-0.03	-0.45	-0.12	-0.27	-0.44	0.29	-0.34	-0.22	-0.25	-0.22
19 Donations _{t-1}	0.89	0.22	0.07	0.40	0.23	0.37	0.41	-0.25	0.44	0.20	0.20	0.17
20 Dues _{t-1}	-0.02	0.05	-0.06	0.05	0.03	0.05	0.03	-0.01	0.03	0.14	0.09	0.03
21 InvestRev _{t-1}	0.46	0.22	0.02	0.40	0.22	0.34	0.39	-0.23	0.36	0.50	0.29	0.16
22 VolsVary	0.12	0.25	0.03	0.20	0.25	0.26	0.20	-0.18	0.20	0.09	0.10	0.11
23 RestDon/NA _t	0.28	0.04	0.00	0.22	0.04	0.12	0.21	-0.16	0.22	0.14	0.10	0.09
24 Complexity _t	0.22	0.30	0.05	0.41	0.30	0.41	0.41	-0.28	0.36	0.44	0.53	0.51

TABLE 2 (Continued)

	Variable	13	14	15	16	17	18	19	20	21	22	23	24
13	<i>FeedDon_{t-1}</i>	1.00											
14	<i>Assets_{t-1}</i>	0.14	1.00										
15	<i>ZeroOffPay_{t-1}</i>	-0.13	-0.21	1.00									
16	<i>Small_{t-1}</i>	-0.13	-0.74	0.15	1.00								
17	<i>Audit_{t-1}</i>	0.20	0.47	-0.24	-0.41	1.00							
18	<i>CashBasis_{t-1}</i>	-0.14	-0.34	0.22	0.29	-0.50	1.00						
19	<i>Donations_{t-1}</i>	0.12	0.64	-0.24	-0.46	0.40	-0.26	1.00					
20	<i>Dues_{t-1}</i>	-0.04	0.09	-0.01	-0.07	0.02	-0.03	-0.03	1.00				
21	<i>InvestRev_{t-1}</i>	0.14	0.72	-0.17	-0.58	0.39	-0.27	0.44	0.10	1.00			
22	<i>VolsVary</i>	0.11	0.15	-0.10	-0.12	0.15	-0.16	0.12	0.01	0.13	1.00		
23	<i>RestDon/NA_t</i>	0.04	0.28	-0.10	-0.21	0.22	-0.16	0.26	0.06	0.27	0.08	1.00	
24	<i>Complexity_t</i>	0.38	0.44	-0.24	-0.37	0.36	-0.31	0.21	0.31	0.45	0.19	0.15	1.00

Note: Number of observations is 173,218, except for *RestDon/NA*, which is 150,314. Bolded correlation coefficients are significant at $p < 0.01$. See the Appendix for variable definitions. We use the natural log of variables, resetting values as zero or negative when appropriate, except for *GenGov* and the indicator variables.

TABLE 3 H1–H2: Value relevance of volunteers.

Panel A: Primary results			
DV = <i>Donations_t</i>	(1)	(2)	(3)
<i>Volunteers_{t-1}</i>		0.003*** (0.000)	0.006*** (0.000)
<i>(Volunteers × ProgRat)_{t-1}</i>			0.014*** (0.000)
<i>(Volunteers × GenGov)_{t-1}</i>			0.006*** (0.000)
<i>ProgRat_{t-1}</i>	0.237*** (0.000)	0.234*** (0.000)	0.232*** (0.000)
<i>GenGov_{t-1}</i>	0.007*** (0.000)	0.006*** (0.000)	0.007*** (0.000)
<i>LowQuality_{t-1}</i>	0.743*** (0.000)	0.739*** (0.000)	0.727*** (0.000)
<i>(ProgRat × LowQuality)_{t-1}</i>	−0.171*** (0.000)	−0.167*** (0.000)	−0.167*** (0.000)
<i>(ProgRat × GenGov)_{t-1}</i>	0.036*** (0.000)	0.036*** (0.000)	0.030*** (0.000)
<i>Fundraising_{t-1}</i>	0.074*** (0.000)	0.073*** (0.000)	0.072*** (0.000)
<i>Age_{t-1}</i>	−0.044*** (0.000)	−0.044*** (0.000)	−0.044*** (0.000)
<i>SalesRev_{t-1}</i>	0.002*** (0.000)	0.002*** (0.000)	0.002*** (0.000)
<i>GovGrants_{t-1}</i>	0.003*** (0.000)	0.003*** (0.000)	0.003*** (0.000)
<i>Dues_{t-1}</i>	−0.001*** (0.004)	−0.001*** (0.002)	−0.001*** (0.003)
<i>InvestRev_{t-1}</i>	−0.001* (0.095)	−0.001* (0.073)	−0.001* (0.053)
<i>FeedDon_{t-1}</i>	−0.000 (0.410)	−0.001 (0.155)	−0.001*** (0.006)
<i>Assets_{t-1}</i>	0.043*** (0.000)	0.043*** (0.000)	0.044*** (0.000)
<i>ZeroOffPay_{t-1}</i>	−0.017*** (0.000)	−0.018*** (0.000)	−0.017*** (0.000)
<i>Small_{t-1}</i>	−0.077*** (0.000)	−0.078*** (0.000)	−0.077*** (0.000)
<i>Audit_{t-1}</i>	0.008** (0.016)	0.009*** (0.005)	0.010*** (0.002)
<i>CashBasis_{t-1}</i>	0.007* (0.056)	0.006* (0.090)	0.005 (0.132)
<i>Donations_{t-1}</i>	0.767*** (0.000)	0.767*** (0.000)	0.764*** (0.000)

TABLE 3 (Continued)

Panel A: Primary results			
DV = <i>Donations_t</i>	(1)	(2)	(3)
Constant	12.520*** (0.000)	12.520*** (0.000)	12.523*** (0.000)
Industry FE and year FE	Included	Included	Included
Observations	164,096	164,097	164,141
Adjusted <i>R</i> ²	0.890	0.890	0.889
Panel B: Results with program ratio decomposed into compensation and non-compensation ratios			
DV = <i>Donations_t</i>	(1)	(2)	
<i>Volunteers_{t-1}</i>	0.004*** (0.000)	0.004*** (0.000)	
(<i>Volunteers</i> × <i>NoCompProgRat</i>)_{t-1}	0.033*** (0.000)		
(<i>Volunteers</i> × <i>CompProgRat</i>)_{t-1}	0.000 (0.952)		
(<i>Volunteers</i> × <i>ProgRat</i>)_{t-1}			0.011*** (0.000)
(<i>Volunteers</i> × <i>GenGov</i>)_{t-1}	0.003*** (0.000)		0.003*** (0.000)
<i>NoCompProgRat_{t-1}</i>	0.270*** (0.000)		
<i>CompProgRat_{t-1}</i>	0.086*** (0.000)		
<i>ProgRat_{t-1}</i>			0.144*** (0.000)
<i>GenGov_{t-1}</i>	−0.009 (0.284)		0.008*** (0.000)
Controls, industry FE, and year FE	Included		Included
Observations	91,355		91,355
Adjusted <i>R</i> ²	0.927		0.927

Note: This table presents coefficients and *p*-values (based on standard errors clustered by organization) from the estimation of Model (1). Primary variables and statistics of interest are in bold. Variables are defined in the Appendix, with the exception of *CompProgRat*, which is the sum of all compensation-related program expenses (officer and employee pay and benefits, from Part 9, lines 4–10, Column B of Form 990) divided by total compensation-related expenses (Part 9, lines 4–10, Column A), and *NoCompProgRat*, which is total program expenses divided by total expenses, after subtracting the program and total expenses in *CompProgRat*. We use the natural log of variables, resetting values as zero or negative when appropriate, except for *GenGov* and the indicator variables. We mean (median) center continuous variables (*GenGov*) to reduce multicollinearity and improve interpretability of the coefficients. *, **, and *** represent significance levels of 10%, 5%, and 1%, respectively (one-tailed for *Volunteers* × *ProgRat* and *Volunteers* × *GenGov*, which test directional hypotheses, and two-tailed for all others).

of all compensation-related program expenses (officer and employee pay and benefits, from Part 9, lines 4–10, Column B of Form 990) divided by total compensation-related expenses (Part 9, lines 4–10, Column A). The non-compensation-related program ratio is calculated as total program expenses divided by total expenses after subtracting the program and total expenses in the compensation-related program ratio. We include both parts of the program ratio in our model and report the results in Column 1 of Table 3, Panel B. Our results persist in

the non-compensation-related portion of the program ratio, alleviating concerns about the influence of a mechanical relation driven by compensation. In Column 2, for comparison, we reestimate Model (1) on the reduced sample used in Column 1.

Finally, we consider the influence of volunteer-managed organizations—that is, where officers, directors, trustees, and key employees are unpaid—to address the concern that controlling for this type of volunteering biases results. In untabulated analysis, we exclude organizations with *ZeroOffPay* equal to one and find nearly indistinguishable differences in the coefficients and significance of the two volunteer interaction variables. We also find that results are robust to (1) excluding *ZeroOffPay* and (2) adding *ZeroOffPay* × *ProgRat* and *ZeroOffPay* × *GenGov*.²¹ In summary, the evidence supports the hypotheses that volunteerism serves as a signal of effectiveness that strengthens the value relevance of the program ratio and governance disclosures to donors.

4.4 | Cross-sectional differences in the value relevance of volunteerism

Results in Table 4, Panel A, confirm that the informational effect of volunteers is stronger for NPOs with more credible volunteer disclosures. Whether partitioning across *Credibility_{Audit}* or *Credibility_{VolsVary}*, the coefficients on both *Volunteers* × *ProgRat* and *Volunteers* × *GenGov* are significantly more positive in the high credibility partitions using a chi-square test ($p < 0.01$).

Results in Table 4, Panel B, show that the informational effect of volunteers is stronger for NPOs with more sophisticated donors. We find that *Volunteers* × *ProgRat* and *Volunteers* × *GenGov* remain consistently positive, although *Volunteers* × *GenGov* is insignificant in one low donor sophistication partition, namely in the partition of NPOs with zero restricted donations reported in Column 1. Columns 3 and 6 show that the interaction coefficients are significantly more positive in the high donor sophistication subsamples, partitioned using either *ResDon_{Pos}* ($p < 0.01$) or *ResDon_{Med}* ($p < 0.05$).

Results in Table 4, Panel C, show that the informational effect of volunteers is stronger in more complex organizations. The coefficients on both *Volunteers* × *ProgRat* and *Volunteers* × *GenGov* increase in *Complexity*. Column 4 (5) reports significant differences between the coefficients when comparing the low and median (median and high) partitions ($p < 0.10$), and we also confirm statistically significant differences between the low and high partitions ($p < 0.01$, untabulated).

Overall, the evidence shows that donors consider volunteer commitment to a greater extent in evaluating the program ratio and governance disclosures among nonprofits that report more credible volunteer disclosures, have a larger proportion of sophisticated donors, and are more complex, which is consistent with our theory and provides corroborating evidence for our main results.

5 | ADDITIONAL ANALYSES

5.1 | Value relevance of volunteer commitment within industries

Next, we explore whether the primary results are consistent for NPOs across three major industry groups: education, health, and charitable. Table 5 shows that the results in each partition are generally consistent with those in our primary analyses. However, the coefficient on *Volunteers* × *ProgRat* is not statistically significant for education NPOs, and the typically positive *Volunteers* main effect is insignificant for health NPOs. Considering these results *ex post*, we can surmise at least two potential explanations. Both health and education are relatively specialized industries, and donors

²¹The coefficients on *ZeroOffPay* × *ProgRat* and *ZeroOffPay* × *GenGov* are negative ($p < 0.01$), indicating that donors discount these disclosures when the organization is managed by volunteers, consistent with the view that paid management signals higher quality (Harris & Neely, 2021; Neely & Trussel, 2015; Yetman & Yetman, 2013).

TABLE 4 Cross-sectional tests

Panel A: Value relevance of volunteers partitioned across disclosure credibility						
Dependent variable	<i>Donations_t</i>					
Partitioning variable	<i>Credibility_{Audit}</i>			<i>Credibility_{Vols Vary}</i>		
Disclosure credibility	(1) <i>Low</i>	(2) <i>High</i>	(3) (2) – (1)	(4) <i>Low</i>	(5) <i>High</i>	(6) (5) – (4)
<i>Volunteers_{t-1}</i>	0.002 (0.103)	0.002*** (0.001)		-0.004*** (0.002)	0.007*** (0.000)	
<i>(Volunteers × ProgRat)_{t-1}</i>	0.006*** (0.000)	0.027*** (0.000)	0.021*** (0.000)	-0.007*** (0.005)	0.025*** (0.000)	0.033*** (0.000)
<i>(Volunteers × GenGov)_{t-1}</i>	0.003*** (0.006)	0.008*** (0.000)	0.005*** (0.000)	0.002 (0.206)	0.008*** (0.000)	0.006*** (0.000)
<i>ProgRat_{t-1}</i>	0.098*** (0.000)	0.323*** (0.000)		0.157*** (0.000)	0.270*** (0.000)	
<i>GenGov_{t-1}</i>	0.001 (0.732)	0.008*** (0.000)		0.014*** (0.000)	0.006*** (0.001)	
Controls, industry FE, and year FE	Included	Included		Included	Included	
Observations	56,307	107,945		31,435	132,712	
Adjusted <i>R</i> ²	0.690	0.896		0.849	0.894	
Panel B: Value relevance of volunteers partitioned across donor sophistication						
Dependent variable	<i>Donations_t</i>					
Partitioning variable	<i>RestDon_{Pos}</i>			<i>RestDon_{Med}</i>		
Donor sophistication	(1) <i>Low</i>	(2) <i>High</i>	(3) (2) – (1)	(4) <i>Low</i>	(5) <i>High</i>	(6) (5) – (4)
<i>Volunteers_{t-1}</i>	-0.000 (0.983)	0.004*** (0.000)		0.000 (0.975)	0.005*** (0.000)	
<i>(Volunteers × ProgRat)_{t-1}</i>	0.007*** (0.002)	0.026*** (0.000)	0.023*** (0.000)	0.013*** (0.000)	0.031*** (0.000)	0.015*** (0.000)
<i>(Volunteers × GenGov)_{t-1}</i>	0.001 (0.265)	0.008*** (0.000)	0.007*** (0.000)	0.005*** (0.000)	0.008*** (0.000)	0.003*** (0.027)
<i>ProgRat_{t-1}</i>	0.122*** (0.000)	0.348*** (0.000)		0.190*** (0.000)	0.367*** (0.000)	
<i>GenGov_{t-1}</i>	0.004 (0.146)	0.009*** (0.000)		0.006*** (0.005)	0.008*** (0.002)	
Controls, industry FE, and year FE	Included	Included		Included	Included	
Observations	41,789	100,745		70,233	72,239	
Adjusted <i>R</i> ²	0.823	0.892		0.857	0.895	
Panel C: Value relevance of volunteers partitioned across organizational complexity						
Dependent variable	<i>Donations_t</i> <i>Complexity_{Med}</i>					
Partitioning variable	(1) <i>Low</i>	(2) <i>Med</i>	(3) <i>High</i>	(4) (2) – (1)	(5) (3) – (2)	
<i>Volunteers_{t-1}</i>	0.003*** (0.001)	0.003** (0.012)	0.007*** (0.000)			

(Continues)

TABLE 4 (Continued)

Panel C: Value relevance of volunteers partitioned across organizational complexity					
Dependent variable	<i>Donations_t</i>				
Partitioning variable	<i>Complexity_{Med}</i>				
Complexity	(1) <i>Low</i>	(2) <i>Med</i>	(3) <i>High</i>	(4) (2) – (1)	(5) (3) – (2)
<i>(Volunteers × ProgRat)_{t-1}</i>	0.006*** (0.001)	0.012*** (0.000)	0.020*** (0.000)	0.006** 0.050	0.008** 0.047
<i>(Volunteers × GenGov)_{t-1}</i>	0.002*** (0.008)	0.005*** (0.000)	0.010*** (0.000)	0.003* 0.054	0.005*** (0.000)
<i>ProgRat_{t-1}</i>	0.120*** (0.000)	0.234*** (0.000)	0.376*** (0.000)		
<i>GenGov_{t-1}</i>	0.008*** (0.000)	0.012*** (0.000)	0.013*** (0.000)		
Controls, industry FE, and year FE	Included	Included	Included		
Observations	52,808	43,236	68,063		
Adjusted <i>R</i> ²	0.851	0.870	0.907		

Note: This table presents coefficients and *p*-values (based on standard errors clustered by organization) from the estimation of Model (1) across disclosure credibility partitions, as well as chi-square tests of the difference between the coefficients in Columns 3 and 6 (4 and 5) for Panels A and B (C). Primary variables and statistics of interest are in bold. See the Appendix for variable definitions. We use the natural log of variables, resetting values as zero or negative when appropriate, except for *GenGov* and the indicator variables. We mean (median) center continuous variables (*GenGov*) to reduce multicollinearity and improve interpretability of the coefficients.

*, **, and *** represent significance levels of 10%, 5%, and 1%, respectively (one-tailed for chi-square tests, which test directional hypotheses, and two-tailed for all others).

may believe that volunteers are less likely to have the necessary skills or knowledge, such as medical or educator training, to contribute meaningfully to, and/or accurately assess, operational effectiveness. These industries are unique in that potential donors and volunteers may have inside knowledge of organizational effectiveness without volunteering or viewing financial disclosures, such as a current or former student/patient or relative of a student/patient.

Untabulated results show that results further vary across industries of charitable nonprofits. We find support for H1 and H2 within partitions of arts and culture, environment and animal, and human services NPOs, and support for H2 within partitions of international affairs and unknown NPOs. While neither hypothesis is supported among public and societal benefit organizations, religious organizations, or mutual benefit organizations, overall, support for H1 (H2) is evident in industry partitions comprising 74% (80%) of our primary sample.

5.2 | Model specification, explanatory power, and materiality

Our primary model builds on the standard donations model, which has evolved over years of research to include a host of explanatory variables. This introduces concerns that the inclusion of unnecessary control variables biases parameter estimates (Whited et al., 2022) and creates obstacles for assessing incremental explanatory power (Johannesson et al., 2023). For example, lagged *Donations* alone explains about 79% of the variation in current *Donations* (untabulated), leaving a narrow avenue for demonstrating the effect of our variables of interest and justifying concerns that “over-controlling” materially impacts the interpretation of results (Whited et al., 2022). We address these concerns in Table 6 by estimating variations of Model (1) to assess both the sensitivity of our primary results to alternative control specifications, following suggestions by Whited et al., (2022) and the practical materiality of our variables of interest, following suggestions by Johannesson et al. (2023).

We begin by estimating standardized regressions (Johannesson et al., 2023). In Column 1 of Table 6, Panel A, we predict *Donations* using only *ProgRat* and *GenGov* as a benchmark regression.

TABLE 5 Value relevance of volunteers by industry.

Dependent variable	<i>Donations_t</i>		
	(1) Education	(2) Health	(3) Charitable
<i>Volunteers</i> _{<i>t</i>-1}	0.005** (0.024)	0.001 (0.717)	0.008*** (0.000)
<i>(Volunteers × ProgRat)</i> _{<i>t</i>-1}	0.005 (0.542)	0.025*** (0.000)	0.013*** (0.000)
<i>(Volunteers × GenGov)</i> _{<i>t</i>-1}	0.006*** (0.002)	0.006*** (0.000)	0.007*** (0.000)
<i>ProgRat</i> _{<i>t</i>-1}	0.414*** (0.000)	0.166*** (0.000)	0.221*** (0.000)
<i>GenGov</i> _{<i>t</i>-1}	0.008 (0.148)	0.013*** (0.005)	0.011*** (0.000)
Controls and year FE	Included	Included	Included
Industry FE	NA	Included	Included
Observations	20,136	18,564	125,441
Adjusted <i>R</i> ²	0.901	0.876	0.888

Note: This table presents coefficients and *p*-values (based on standard errors clustered by organization) from the estimation of Model (1) across NPO type. Primary variables and statistics of interest are in bold. Column 1 presents the results run on the subsample of education nonprofits (NTEE Code = B). Column 2 presents the results run on the subsample of medical nonprofits (NTEE Code = E, F, G, or H). Column 3 presents the results of all other nonprofits in our main sample, which we designate as “charitable” nonprofits. See the Appendix for variable definitions. We use the natural log of variables, resetting values as zero or negative when appropriate, except for *GenGov* and the indicator variables. We mean (median) center continuous variables (*GenGov*) to reduce multicollinearity and improve interpretability of the coefficients.

*, **, and *** represent significance levels of 10%, 5%, and 1%, respectively (one-tailed for *Volunteers × ProgRat* and *Volunteers × GenGov*, which test directional hypotheses, and two-tailed for all others).

Results show that these two alternative measures of effectiveness explain about 18.7% of donations. We expand the model to include *Volunteers* (Column 2) and its interactions with *ProgRat* and *GenGov* (Column 3). Columns 4–6 repeat this pattern but with the inclusion of industry and year fixed effects. In Column 7, we present a reduced version of Model (1). Following Whited et al.’s (2022) suggestions, we restrict the control variables in Column 7 to those with clear theoretical and/or economic ties to both *Donations* and our variables of interest (*Volunteers × ProgRat* and *Volunteers × GenGov*): *Fundraising*, alternative revenue sources (*SalesRev*, *GovGrants*, *Dues*, *InvestRev*, and *FeedDon*), *Age*, *Assets*, and *ZeroOffPay*.²² Table 6, Panel A, demonstrates that the results of our primary analyses are not sensitive to these alternative control structures.

We next employ the results in Panel A of Table 6 to assess the explanatory power of our variables of interest based on the suggestions in Johannesson et al. (2023). For brevity, we focus our discussion on Columns 4–6, but inferences are consistent when omitting fixed effects in Columns 1–3. First, in untabulated results, we find that the residual of the model that omits *Volunteers* (Panel A, Column 4) is significantly correlated with *Volunteers* (0.15; *p* < 0.01),

²²Our rationale is as follows, presented in order of variable listed. We include *ProgRat* and *GenGov* because our variables of interest are interactions of these variables with *Volunteers*. Volunteers may be involved with fundraising efforts that increase donations. Access to alternative revenue sources can reduce nonprofits’ incentives to pursue donations and unpaid labor. Larger or older nonprofits may benefit from greater awareness and familiarity among potential volunteers and donors. As discussed in detail in Sections 3 and 4, having key officers as volunteers could indicate a lower degree of professionalism and is negatively associated with both donations and general *Volunteers*. We exclude *ProgRat × GenGov*, *LowQuality*, *LowQuality × ProgRat*, *Audit*, and *CashBasis* because, while they reasonably predict *Donations*, we lack theoretical or economically grounded expectations for an association with *Volunteers*. We exclude *Small* given that we also control for *Assets*. Lagged *Donations* alleviates certain econometric concerns as previously discussed but lacks a direct theoretical or economic tie to *Volunteers*.

TABLE 6 Assessment of incremental explanatory power for variables of interest.

Panel A: Sensitivity of primary results to alternative control specifications							
DV = <i>Donations_t</i>	(1)	(2)	(3)	(4)	(5)	(6)	(7)
<i>Volunteers_{t-1}</i>		0.113*** (29.053)	0.174*** (37.252)		0.149*** (33.980)	0.221*** (43.129)	0.095*** (26.568)
(<i>Volunteers</i> × <i>ProgRat</i>)_{t-1}			0.038*** (13.781)			0.042*** (14.945)	0.035*** (13.410)
(<i>Volunteers</i> × <i>GenGov</i>)_{t-1}			0.131*** (37.950)			0.149*** (36.904)	0.094*** (30.538)
<i>ProgRat_{t-1}</i>	0.065*** (27.387)	0.058*** (25.335)	0.069*** (25.569)	0.055*** (22.022)	0.050*** (19.922)	0.065*** (23.071)	0.077*** (26.999)
<i>GenGov_{t-1}</i>	0.426*** (120.083)	0.396*** (107.593)	0.395*** (108.348)	0.434*** (109.661)	0.398*** (101.986)	0.398*** (104.192)	0.094*** (28.111)
Reduced model controls	Excluded	Excluded	Excluded	Excluded	Excluded	Excluded	Included
Industry FE and year FE	Excluded	Excluded	Excluded	Included	Included	Included	Included
Observations	166,758	165,334	165,791	164,925	164,701	164,658	164,175
Adjusted <i>R</i> ²	0.187	0.198	0.212	0.229	0.249	0.272	0.578
Panel B: Pearson correlation between actual and predicted <i>Donations</i>							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Correlation	0.411***	0.427***	0.447***	0.456***	0.476***	0.493***	0.724***
Panel C: Required <i>N</i> to obtain significance (<i>N</i> *)							
Variable	(1)	(2)	(3)	(4)	(5)	(6)	(7)
<i>Volunteers_{t-1}</i>		784	478		571	354	930
(<i>Volunteers</i> × <i>ProgRat</i>)_{t-1}			3,492			2,949	3,652
(<i>Volunteers</i> × <i>GenGov</i>)_{t-1}			460			484	704

Note: Panel A presents standardized regression coefficients and *t*-statistics. Primary variables and statistics of interest are in bold. The reduced model controls include *Fundraising*, *Age*, *SalesRev*, *GovGrants*, *Dues*, *InvestRev*, *FeedDon*, *Assets*, and *ZeroOffPay*. See the Appendix for variable definitions. We use the natural log of variables, resetting values as zero or negative when appropriate, except for *GenGov* and the indicator variables. We mean (median) center continuous variables (*GenGov*) to reduce multicollinearity and improve interpretability of the coefficients. Panel B provides the Pearson correlation coefficients and significance levels for correlations between the predicted and actual value of *Donations* for each regression in Panel A. Panel C shows the estimated number of observations necessary to obtain the level of statistical significance shown for each of our variables of interest in Panel A. It is calculated, following Johansson et al. (2023), as $[2/t\text{-statistic}]^2 \times N$.

*** represents significance level of 1% (one-tailed for *Volunteers* × *ProgRat* and *Volunteers* × *GenGov*, which test directional hypotheses, and two-tailed for all others).

Volunteers × *ProgRat* (0.06; $p < 0.01$), and *Volunteers* × *GenGov* (0.06; $p < 0.01$). Second, throughout Panel A, the standardized regression coefficients on *Volunteers* exceed the recommended threshold (0.05) for assessing incremental material explanatory power to a model, and the interactions further increase the cumulative explanatory power of *Volunteers*.²³ Third,

²³In untabulated results, we include all Model (1) controls. The standardized regression coefficients on *Volunteers* and the interactions sum to 0.109 (0.029) when excluding (including) lagged donations. Only the standardized regression coefficients *ProgRat*, *LowQuality*, *Fundraising*, and *Assets* are greater than 0.05 when including lagged donations.

Panel A shows that adjusted R^2 values increase from 0.229 in Column 4 when excluding *Volunteers*, to 0.249 in Column 5 when including *Volunteers*, to 0.272 in Column 6 when also including the interactions—a total increase in adjusted R^2 of 18.7% from Columns 4 to 6. Fourth, and similarly, Panel B shows that the correlation between actual and predicted *Donations* increases from 0.456 in Column 4, to 0.476 in Column 5, and finally to 0.493 in Column 6. Finally, Panel C reports that the sample sizes required to obtain the significance levels shown for *Volunteers* and the interactions in each regression (N^* , calculated as $[2/t\text{-statistic}]^2 \times N$) are all below 5,000, the maximum rule of thumb suggested by Johannesson et al. (2023). This alleviates concerns that our variables of interest are statistically significant due to a large sample size despite being of little value in terms of explanatory power.

5.3 | Endogeneity

The potential for contemporaneous relationships among volunteerism, donations, and other organizational attributes presents empirical challenges when considering volunteers as a signal of effectiveness. Importantly, our theory is based on the idea that donors of money respond to disclosed volunteers as a signal of organizational effectiveness. Since organizational effectiveness is unobservable, a primary concern is that Model (1) does not adequately control for factors *other than organizational effectiveness* that influence both donations and disclosed volunteers.

We take several steps to address this potential endogeneity, beginning with the specific concern that decisions to contribute time and money are made jointly. Model (1) predicts year t donations based on disclosures made in year $t - 1$. Thus, our primary analyses test the relationship between *current year* donation decisions and *previous year* volunteer decisions. Given the possibility that decisions to donate or volunteer in year t and $t - 1$ are correlated, Model (1) also controls for *Donations* in year $t - 1$, substantially alleviating concerns about omitted, nonprofit-specific attributes that influence these decisions across multiple periods.

In untabulated analyses, we further investigate the joint decision process. First, we estimate the base donations model presented in Table 3, Panel A, Column 1, alternatively using *Donations* and *Volunteers* as the dependent variable to evaluate commonalities in the determinants of donations and volunteers. A Hausman test rejects the null hypothesis that donations and volunteers are jointly determined by the same latent variable ($p < 0.01$). Next, we employ seemingly unrelated regression (SUR) to account for potential correlation in error terms between models of *Donations* and *Volunteers* in a system of equations where *Donations* is estimated using Model (1), and *Volunteers* is estimated using the full Model (1) control set.²⁴ The coefficients on *Volunteers* and its interaction terms are nearly indistinguishable from those presented in Table 3, Panel A, Column 3.

Next, we consider the impact of correlated omitted variables more broadly. In our primary analyses, for an omitted or simultaneous determinant to bias the interpretation of our results, it would need to not only correlate with volunteers and donations but also with (1) the value relevance of (i.e., the donor response to) program ratios and governance, (2) disclosure credibility, (3) donor sophistication, and (4) organizational complexity. To alleviate remaining concerns that organization size unduly influences results despite the controls in place, we estimate Model (1) on size quartiles based on total assets within industry. Results are consistent, with the

²⁴We obtain the same result using Model (2), described below, to estimate *Volunteers* using SUR. We considered using two-staged least squares (2SLS), but we are unable to identify a suitable instrument for *Volunteers* that satisfies the necessary conditions for exogeneity (Larcker & Rusticus, 2010). Some instruments we considered included the percent of the local population that is nonworking under the assumption that they have time to volunteer, number of employees, and grant reliance following Callen, 1994. Like 2SLS, SUR is a system of equations that accounts for correlation in error terms, but SUR is not a substitute for 2SLS. We appreciate this suggestion from a reviewer.

exception that *Volunteers*×*GenGov* is insignificant in the lowest size quartile (untabulated). We also estimate the impact threshold required for a confounding variable (ITCV) to bias results, following Frank (2000) and Pan and Frank (2003). This analysis (untabulated) suggests that 82% (87%) of the *Volunteers*×*ProgRat* (*Volunteers*×*GenGov*) effect in Model (1) would need to be attributable to an omitted variable to invalidate inferences. As suggested by Larcker and Rusticus (2010), after benchmarking the ITCVs against the impact factors of the most impactful control variables in Model (1), we find that an omitted variable would need to be about 24 (2) times more impactful than *Dues* (*Fundraising*) in predicting donations to invalidate inferences based on the *Volunteers*×*ProgRat* (*Volunteers*×*GenGov*) coefficient.²⁵

Finally, we directly address the possibility that *Volunteers* not only captures organizational effectiveness but also other attributes *unrelated* to organizational effectiveness. We expect donors to consider an NPO's size, industry, and other factors when evaluating whether the number of volunteers signals a degree of effectiveness. Holding these factors constant, donors might perceive that more (less) effective organizations can maintain a higher (lower) level of volunteer commitment, based on our theory. We construct an alternative measure, *UVolunteers*, as the residual of the following OLS regression model based on prior research that predicts volunteers (Callen, 1994; Paxton et al., 2020):

$$\begin{aligned} \text{Volunteers}_{it} = & \alpha_0 + \beta_1 \text{SalesRev}_{it} + \beta_2 \text{ContRev}_{it} + \beta_3 \text{OthRev}_{it} + \beta_4 \text{Fundraising}_{it} + \beta_5 \text{Age}_{it} \\ & + \beta_6 \text{Assets}_{it} + \beta_7 \text{Employees}_{it} + \beta_8 \text{ProgRat}_{it} + \beta_9 \text{GenGov}_{it} + \sum \delta_i \text{Year}_i + \varepsilon_{it}. \end{aligned} \quad (2)$$

The dependent variable, *Volunteers*, is the number of volunteers. Following Callen (1994) and Paxton et al. (2020), we control for the NPO's revenue streams, which include program service and sales revenue (*SalesRev*), total contributions (*ContRev*), and other revenue (*OthRev*), as well as *Fundraising* and *Age*. Following Paxton et al. (2020), we also include *Assets* and number of employees (*Employees*). We include *ProgRat* and *GenGov* to extract the effect of alternative effectiveness signals available to donors, although results are not sensitive to excluding these measures. We measure all variables, except for *GenGov*, using natural logs, resetting values as zero or negative when appropriate. Finally, we control for time-series variation using year fixed effects (*Year*). We estimate the model cross-sectionally by industry, using the 26 NTEE industry classifications, because we expect donors to assess whether volunteer commitment is "high" or "low" based on industry norms.

From our initial data set of all NPOs, we remove observations with obvious errors, such as program ratios greater than 100%; with less than \$10,000 in donations (Garven et al., 2018); and without sufficient data to estimate Model (2).²⁶ We report the results estimated on the resulting sample of 453,774 observations representing 121,880 NPOs in Table 7, Panel B (Panel A reports descriptive statistics). For purposes of exposition, we report the results estimated on the pooled sample with industry fixed effects rather than reporting separate within-industry regressions. When estimated cross-sectionally by industry, Model (2) obtains a mean (median) adjusted R^2 of 12% (15%). The coefficient on each variable is positive and significant in predicting volunteers, except for the number of employees, which is negative and significant, and total assets, which is insignificant.

Table 8, Columns 1 and 3, shows that primary results are consistent using *UVolunteers* in place of *Volunteers* in Model (1).²⁷ However, the industry analysis discussed earlier reveals that

²⁵When considering *Volunteers*×*ProgRat* (*Volunteers*×*GenGov*), the most influential control variable other than lagged donations is *Dues* (*Fundraising*), with a partial impact factor of 0.0008 (0.014). The ITCV for *Volunteers*×*ProgRat* (*Volunteers*×*GenGov*) is 0.0192 (0.0280). We obtain similar results replacing *Volunteers* with *UVolunteers*, the residual of Model (2) described below.

²⁶We obtain consistent results when we estimate Model (2) on only the subset of observations that we use to estimate Model (1). However, estimating Model (2) on the entirety of available observations obtains more precise estimates of higher- or lower-than-expected volunteer commitment.

²⁷We also confirm that the Table 3 results are robust to including the Model (2) determinants not already included in Model (1) (i.e., *ContRev*, *OthRev*, and *Employees*) (untabulated).

TABLE 7 Alternative measure of volunteers, *UVolunteers*.

Panel A: Descriptive statistics						
Variable	N	Mean	SD	Q1	Median	Q3
<i>Volunteers_t</i>	453,774	1,714	203,899	11	45	165
<i>SalesRev_t</i>	453,774	12,729,235	157,228,224	0	123,597	1,125,952
<i>ContRev_t</i>	453,774	3,446,563	33,235,891	137,150	387,853	1,350,500
<i>OthRev_t</i>	453,774	1,101,785	20,187,986	2,280	28,512	141,389
<i>Fundraising_t</i>	453,774	207,875	1,966,165	0	7,234	71,239
<i>Age_t</i>	453,774	29.12	20.282	12.923	25.099	41.277
<i>Assets_t</i>	453,774	31,743,004	465,570,627	306,331	1,148,105	5,563,787
<i>Employees_t</i>	453,774	184	1,603	3	14	71
<i>ProgRat_t</i>	453,774	0.806	0.169	0.755	0.841	0.909
<i>GenGov_t</i>	453,774	3.187	1.052	2	3	4
Panel B: Model to estimate <i>UVolunteers</i>						
DV = <i>Volunteers_t</i>						(1)
<i>SalesRev_t</i>						0.005*** (0.000)
<i>ContRev_t</i>						0.118*** (0.000)
<i>OthRev_t</i>						0.066*** (0.000)
<i>Fundraising_t</i>						0.056*** (0.000)
<i>Age_t</i>						0.169*** (0.000)
<i>Assets_t</i>						−0.001 (0.606)
<i>Employees_t</i>						−0.019*** (0.000)
<i>ProgRat_t</i>						0.023*** (0.000)
<i>GenGov_t</i>						0.155*** (0.000)
Constant						0.136*** (0.000)
Industry FE and year FE						Included
Observations						453,774
Adjusted <i>R</i> ²						0.161

Note: Panel A provides descriptive statistics for the raw values of variables used to estimate Model (2) over 2010–2017. Panel B reports the coefficients and *p*-values from the estimation of Model (2) on the pooled sample with industry fixed effects, although for purposes of estimating *UVolunteers*, we estimate the model cross-sectionally by industry. Variables are defined in the Appendix. We use the natural log of variables, resetting values as zero or negative when appropriate, except for *GenGov*.

*, **, and *** represent significance levels of 10%, 5%, and 1%, respectively.

donors perceive volunteer disclosures as more value relevant in certain industries, implying that observable factors can also affect whether donors perceive volunteers as a signal of effectiveness. Thus, in Table 8, Columns 2 and 4, we decompose *Volunteers* into unexpected (*UVolunteers*) and expected (*EVolunteers*), which is predicted *Volunteers* using Model (2). While results in Column 2 suggest that *UVolunteers* drives the *Volunteers* main effect, Column 4 indicates that *EVolunteers* is also value relevant to donors when considered alongside program ratios and governance. *UVolunteers* and its interactions remain statistically significant and similar in magnitude to those reported in Columns 1 and 3.

We extend the *UVolunteers* analyses into our cross-sectional tests in Table 9. We estimate Model (1) using *UVolunteers* in place of *Volunteers* within partitions of disclosure credibility (Panel A), donor sophistication (Panel B), and organizational complexity (Panel C). For brevity, only *UVolunteers* and the interaction variables used to test H1 and H2 are tabulated for each regression. Results are consistent with the primary results, except that the *UVolunteers*×*GenGov* coefficient does not differ statistically between NPOs with versus without financial statement audits (Panel A, Column 3), nor between NPOs with versus without restricted donations above the median (Panel B, Column 6). Additionally, the *UVolunteers*×*ProgRat* coefficient does not differ statistically between high and medium

TABLE 8 Alternative measure of volunteers, *UVolunteers* and *EVolunteers*.

DV = <i>Donations_t</i>	(1)	(2)	(3)	(4)
<i>UVolunteers_{t-1}</i>	0.003*** (0.000)	0.003*** (0.000)	0.005*** (0.000)	0.004*** (0.000)
<i>EVolunteers_{t-1}</i>		0.000 (0.979)		0.005 (0.117)
(<i>UVolunteers</i>×<i>ProgRat</i>)_{t-1}			0.004*** (0.006)	0.006*** (0.000)
(<i>UVolunteers</i>×<i>GenGov</i>)_{t-1}			0.003*** (0.000)	0.002*** (0.000)
(<i>EVolunteers</i>×<i>ProgRat</i>)_{t-1}				0.065*** (0.000)
(<i>EVolunteers</i>×<i>GenGov</i>)_{t-1}				0.026*** (0.000)
<i>ProgRat_{t-1}</i>	0.234*** (0.000)	0.234*** (0.000)	0.237*** (0.000)	0.226* (0.000)
<i>GenGov_{t-1}</i>	0.007*** (0.000)	0.007*** (0.000)	0.007*** (0.000)	0.014*** (0.000)
Controls, industry FE, and year FE	Included	Included	Included	Included
Observations	164,088	164,053	164,155	164,173
Adjusted R ²	0.890	0.890	0.889	0.889

Note: This table reports the coefficients and *p*-values (based on standard errors clustered by organization) from the estimation of Model (1), replacing *Volunteers* with *UVolunteers* (Columns 1 and 3) and decomposing *Volunteers* into unexpected (*UVolunteers*) and expected (*EVolunteers*) portions (Columns 2 and 4). Primary variables and statistics of interest are in bold. See the Appendix for variable definitions. We use the natural log of variables, resetting values as zero or negative when appropriate, except for *UVolunteers* (*EVolunteers*) (as this is the residual [predicted] value of a regression where the dependent variable is logged), *GenGov*, and the indicator variables. We mean (median) center continuous variables (*GenGov*) to reduce multicollinearity and improve interpretability of the coefficients.

*, **, and *** represent significance levels of 10%, 5%, and 1%, respectively (one-tailed for *UVolunteers*×*ProgRat*, *UVolunteers*×*GenGov*, *EVolunteers*×*ProgRat*, and *EVolunteers*×*GenGov*, which test directional hypotheses, and two-tailed for all others).

organizational complexity (Panel C, Column 5) but does differ between the high and low partitions ($p < 0.05$, untabulated). We acknowledge that the reliability of these analyses depends on the extent to which Model (2) successfully controls for determinants of *Volunteers* unrelated to

TABLE 9 Cross-sectional tests using alternative measure of volunteers, *UVolunteers*.

Panel A: Value relevance of volunteers partitioned across disclosure credibility						
Dependent variable	<i>Donations_t</i>					
	<i>Credibility_{Audit}</i>			<i>Credibility_{Vols Vary}</i>		
	(1) <i>Low</i>	(2) <i>High</i>	(3) (2) – (1)	(4) <i>Low</i>	(5) <i>High</i>	(6) (5) – (4)
<i>UVolunteers_{t-1}</i>	0.001 (0.305)	0.002*** (0.001)		–0.003** (0.015)	0.006*** (0.000)	
<i>(UVolunteers × ProgRat)_{t-1}</i>	0.002* (0.072)	0.014*** (0.000)	0.012*** (0.000)	–0.008*** (0.002)	0.012*** (0.000)	0.020*** (0.000)
<i>(UVolunteers × GenGov)_{t-1}</i>	0.004*** (0.000)	0.004*** (0.000)	0.001 (0.393)	–0.001 (0.238)	0.005*** (0.003)	0.006*** (0.003)
<i>ProgRat_{t-1}</i>	0.102*** (0.000)	0.323*** (0.000)		0.157*** (0.000)	0.269*** (0.000)	
<i>GenGov_{t-1}</i>	0.002 (0.471)	0.007*** (0.001)		0.013*** (0.000)	0.005*** (0.006)	
Controls, industry FE, and year FE	Included	Included		Included	Included	
Observations	56,288	107,935		31,442	132,655	
Adjusted R^2	0.689	0.895		0.848	0.894	
Panel B: Value relevance of volunteers partitioned across donor sophistication						
Dependent variable	<i>Donations_t</i>					
	<i>RestDon_{Pos}</i>			<i>RestDon_{Med}</i>		
	(1) <i>Low</i>	(2) <i>High</i>	(3) (2) – (1)	(4) <i>Low</i>	(5) <i>High</i>	(6) (5) – (4)
<i>UVolunteers_{t-1}</i>	0.000 (0.912)	0.004*** (0.000)		0.002* (0.099)	0.004*** (0.000)	
<i>(UVolunteers × ProgRat)_{t-1}</i>	0.002 (0.168)	0.015*** (0.000)	0.013*** (0.000)	0.007*** (0.001)	0.017*** (0.000)	0.010** (0.023)
<i>(UVolunteers × GenGov)_{t-1}</i>	–0.000 (0.956)	0.003*** (0.000)	0.003*** (0.009)	0.002** (0.010)	0.003*** (0.001)	0.001 (0.160)
<i>ProgRat_{t-1}</i>	0.122*** (0.000)	0.346*** (0.000)		0.198*** (0.000)	0.358*** (0.000)	
<i>GenGov_{t-1}</i>	0.004 (0.178)	0.008*** (0.000)		0.005** (0.012)	0.007*** (0.007)	
Controls, industry FE, and year FE	Included	Included		Included	Included	
Observations	41,781	100,746		70,226	72,240	
Adjusted R^2	0.823	0.891		0.856	0.895	

(Continues)

TABLE 9 (Continued)

Panel C: Value relevance of volunteers partitioned across organizational complexity					
Dependent variable	<i>Donations_t</i>				
Partitioning variable	<i>Complexity_{Med}</i>				
Complexity	(1) <i>Low</i>	(2) <i>Med</i>	(3) <i>High</i>	(4) (2) – (1)	(5) (3) – (2)
<i>UVolunteers_{t-1}</i>	0.003*** (0.002)	0.002 (0.103)	0.006** (0.000)		
<i>(UVolunteers × ProgRat)_{t-1}</i>	0.001 (0.225)	0.005* (0.046)	0.008** (0.045)	0.004* 0.074	0.003 0.153
<i>(UVolunteers × GenGov)_{t-1}</i>	0.000 (0.337)	0.002** (0.026)	0.005*** (0.000)	0.002* 0.079	0.003** 0.0283
<i>ProgRat_{t-1}</i>	0.123*** (0.000)	0.235*** (0.000)	0.385*** (0.000)		
<i>GenGov_{t-1}</i>	0.008*** (0.000)	0.012*** (0.000)	0.013*** (0.000)		
Controls, industry FE, and year FE	Included	Included	Included		
Observations	52,806	43,240	68,084		
Adjusted <i>R</i> ²	0.85	0.87	0.907		

Note: Table presents coefficients and *p*-values (based on standard errors clustered by organization) from the estimation of Model (1), replacing *Volunteers* with *UVolunteers*, across disclosure credibility (Panel A), donor sophistication (Panel B), and organizational complexity (Panel C) partitions, as well as chi-square tests of the difference between the coefficients. Primary variables and statistics of interest are in bold. See the Appendix for variable definitions. We use the natural log of variables, resetting values as zero or negative when appropriate, except for *GenGov*, *UVolunteers* (as this value is the residual of a regression where the dependent variable is logged), and the indicator variables. We mean (median) center continuous variables (*GenGov*) to reduce multicollinearity and improve interpretability of the coefficients.

*, **, and *** represent significance levels of 10%, 5%, and 1%, respectively (one-tailed for *UVolunteers* interactions and chi-square tests, which test directional hypotheses, and two-tailed for all others).

effectiveness. However, taken as a whole, these and other procedures designed to address endogeneity continue to support our conclusions.

6 | CONCLUSIONS

The extent to which an NPO accomplishes its charitable mission is both highly subjective and difficult to measure accurately. Donors and other stakeholders commonly use the program ratio and disclosures of corporate governance practices to assess some degree of effectiveness despite their limitations in fully capturing effectiveness. We argue that volunteers, as insiders to an organization, are better positioned (relative to donors) to judge whether their contributions result in a positive impact. The purpose of our paper is to determine whether donors perceive volunteer commitment as a useful signal, incremental and complementary to the program ratio and corporate governance disclosures, in assessing NPO effectiveness.

We document that the volunteer disclosure on Form 990 strengthens the value relevance of the program ratio and governance disclosures to donors. As theory would suggest, these results are concentrated in organizations with more credible volunteer disclosures and that are more complex. We also show that sophisticated donors consider volunteer commitment in evaluating the program ratio and governance disclosures to a greater extent than less sophisticated donors.

In summary, our study offers novel evidence that volunteer commitment serves as a signal of effectiveness to donors—an association that has not been explored or documented by prior research. Yet, our evidence is subject to limitations. Form 990 data, including volunteer disclosures and other measures important to our study (e.g., restricted donations, financial reporting oversight), can be imprecise due to error and inconsistent reporting practices. Albeit imprecise, these are the measures available to donors. Additionally, concerns about endogeneity between volunteerism and monetary donations and whether the volunteers' disclosure substantially improves the donations model beyond existing control variables are challenging to address—especially considering potential noise in the data. Notably, our findings remain statistically reliable using various approaches to addressing these concerns, suggesting that our core insights about the value relevance of volunteer disclosures are robust. Evidence that the current volunteer disclosure increases the value relevance of other financial and nonfinancial disclosures suggests that further volunteer disclosures—for example, volunteer roles, hours, or turnover—might also be valuable to donors and regulators seeking to evaluate nonprofit effectiveness. As such, our findings contribute to NPO accounting research and inform regulators who make decisions about the disclosures required on Form 990.

ACKNOWLEDGMENTS

The authors thank Peter Clarkson (editor), two anonymous reviewers, Jeffrey Callen, Laurie Corradino, Linda Parsons, Christine Petrovits, Greg Saxton, Carolyn Tumbleson, Tammy Waymire, Paul Wong, and workshop participants at the 2021 AAA Government and Nonprofit Section Midyear Meeting, University of California at Davis, and HEC Montreal for their valuable comments and advice. The authors are thankful to their respective universities for the financial support to purchase the data used in this study. Beck also thanks the Center for Economic Analysis and Risk at Robinson College of Business.

DATA AVAILABILITY STATEMENT

All data are publicly available.

REFERENCES

- Aggarwal, R., Evans, M., & Nanda, D. (2012). Nonprofit boards: Size, performance, and managerial incentives. *Journal of Accounting and Economics*, 53(1–2), 466–487.
- Andreoni, J. (1989). Giving with impure altruism: Applications to charity and Ricardian equivalence. *Journal of Political Economy*, 97(6), 1447–1458.
- Bekkers, R., & Bowman, W. (2009). The relationship between confidence in charitable organizations and volunteering revisited. *Nonprofit and Voluntary Sector Quarterly*, 38(5), 884–897.
- Blackwell, D., Noland, T., & Winters, D. (1998). The value of auditor assurance: Evidence from loan pricing. *Journal of Accounting Research*, 36(1), 57–70.
- Boland, C., Harris, E., Petrovits, C., & Yetman, M. (2020). Controlling for corporate governance in nonprofit research. *Journal of Governmental and Nonprofit Accounting*, 9(1), 1–44.
- Bowman, W. (2004). Confidence in charitable institutions and volunteering. *Nonprofit and Voluntary Sector Quarterly*, 33(2), 247–270.
- Brazel, J., Jones, K., & Zimbelman, M. (2009). Using nonfinancial measures to assess fraud risk. *Journal of Accounting Research*, 47(5), 1135–1166.
- Brody, E. (2007). The board of nonprofit organizations: Puzzling through the gaps between law and practice. *Fordham Law Review*, 76(2), 521–566.
- Brody, E. (2012). Sunshine and shadow on charity governance: Public disclosure as a regulatory tool. *Florida Tax Review*, 12(4), 183–234.
- Brown, E., & Lankford, H. (1992). Gifts of money and gifts of time: Estimating the effects of tax prices and available time. *Journal of Public Economics*, 47(3), 321–341.
- Bushman, R., Chen, Q., Engel, E., & Smith, A. (2004). Financial accounting information, organizational complexity and corporate governance systems. *Journal of Accounting and Economics*, 37(2), 167–201.
- Callen, J. (1994). Money donations, volunteering, and organizational efficiency. *Journal of Productivity Analysis*, 5(3), 215–228.
- Connelly, B., Certo, S., Ireland, R., & Reutzel, C. (2011). Signaling theory: A review and assessment. *Journal of Management*, 37(1), 39–67.

- Dhaliwal, D., Li, O., Tsang, A., & Yang, Y. (2011). Voluntary nonfinancial disclosure and the cost of equity capital: The initiation of corporate social responsibility reporting. *The Accounting Review*, 86(1), 59–100.
- Dye, R., & Sridhar, S. (2007). The allocational effects of the precision of accounting estimates. *Journal of Accounting Research*, 45(4), 731–769.
- FASB. (2009). *Not-for-profit entities* (Accounting Standards Codification 958).
- FASB. (2020). *Presentation and disclosures by not-for-profit entities for contributed nonfinancial assets* (Accounting Standards Update No. 2020-07).
- Frank, K. (2000). Impact of a confounding variable on a regression coefficient. *Sociological Methods & Research*, 29(2), 147–194.
- Funding for Good. (2019, February 14). *Top 5 reasons for tracking volunteer hours*. <https://fundingforgood.org/top-5-reasons-for-tracking-volunteer-hours/>
- Garven, S., Beck, A., & Parsons, L. (2018). Are audit-related factors associated with financial reporting quality in non-profit organizations? *Auditing: A Journal of Practice & Theory*, 37(1), 49–68.
- Garven, S., Hofmann, M., & McSwain, D. (2016). Playing the numbers game: Program ratio management in nonprofit organizations. *Nonprofit Management & Leadership*, 26(4), 401–416.
- Gellman, A. (2022, April 25). *Reporting the total number of volunteers on the Form 990*. Nonprofit Accounting Basics. <https://www.nonprofitaccountingbasics.org/form-990-core-form/reporting-total-number-volunteers-form-990>
- Giving USA. (2023). *Giving USA 2023: The annual report on philanthropy for the year 2022*. www.givingusa.org
- Gordon, T., & Khumawala, S. (1999). The demand for not-for-profit financial statements: A model for individual giving. *Journal of Accounting Literature*, 18, 31–56.
- Grube, J., & Piliavin, J. (2000). Role identity, organizational experiences, and volunteer performance. *Personality and Social Psychology Bulletin*, 26(9), 1108–1119.
- GuideStar. (2024). *Get a platinum seal*. Candid. <https://www.guidestar.org/UpdateNonprofitProfile/get-platinum>
- Hager, M., Pollak, T., Wing, K., Rooney, P., & Flack, T. (2004). *The pros and cons of financial efficiency standards* (Brief No. 5). Center on Nonprofits and Philanthropy & Urban Institute Center on Philanthropy, Indiana University. <https://www.urban.org/sites/default/files/publication/57756/311055-The-Pros-and-Cons-of-Financial-Efficiency-Standards.PDF>
- Hansmann, H. (1980). The role of nonprofit enterprise. *Yale Law Journal*, 89(5), 835–898.
- Hansmann, H. (1996). *The ownership of enterprise*. Harvard University Press.
- Harris, E., & Neely, D. (2016). Multiple information signals in the market for charitable donations. *Contemporary Accounting Research*, 33(3), 989–1012.
- Harris, E., & Neely, D. (2021). Determinants and consequences of nonprofit transparency. *Journal of Accounting, Auditing & Finance*, 36(1), 195–220.
- Harris, E., Neely, D., & Parsons, L. (2023). *Mission metrics: Reexamining the relation between performance, contributions, and executive compensation*. Working paper, Florida International University, University of Wisconsin-Milwaukee, and the University of Alabama.
- Harris, E., Petrovits, C., & Yetman, M. (2015). The effect of nonprofit governance on donations: Evidence from the revised Form 990. *The Accounting Review*, 90(2), 579–610.
- Harris, E., Petrovits, C., & Yetman, M. (2017). Why bad things happen to good organizations: The link between governance and asset diversions in public charities. *Journal of Business Ethics*, 146(1), 149–166.
- Herman, R., & Heimovics, R. (1994). A cross-national study of a method for researching non-profit organizational effectiveness. *Voluntas*, 5(1), 86–100.
- Hodge, F. (2001). Hyperlinking unaudited information to audited financial statements: Effects on investor judgments. *The Accounting Review*, 76(4), 675–691.
- IRS. (2007, June 14). *IRS releases discussion draft of redesigned Form 990 for tax-exempt organizations*. IRS News Release IR-2007-117. <https://www.irs.gov/pub/irs-news/ir-07-117.pdf>
- Jennings, R. (1987). Unsystematic security price movements, management earnings forecasts, and revisions in consensus analyst earnings forecasts. *Journal of Accounting Research*, 25(1), 90–110.
- Johannesson, E., Ohlson, J., & Zhai, S. (2023). The explanatory power of explanatory variables. *Review of Accounting Studies*, 29, 3053–3083. <https://link.springer.com/article/10.1007/s11142-023-09781-w>
- Jones, C., & Roberts, A. (2006). Management of financial information in charitable organizations: The case of joint cost allocations. *The Accounting Review*, 81(1), 159–178.
- Keating, E., Parsons, L., & Roberts, A. (2008). Misreporting fundraising: How do nonprofit organizations account for telemarketing campaigns? *The Accounting Review*, 83(2), 417–446.
- Khumawala, S., Gordon, T., & Parsons, L. (2005). Assessing the quality of not-for-profit efficiency ratios: Do donors use joint cost allocation disclosures? *Journal of Accounting, Auditing and Finance*, 20(3), 287–309.
- Khumawala, S., & Shroff, A. (2023). Donor use of nonprofit financial information. In D. Tinkelman & L. M. Parsons (Eds.), *Research handbook on nonprofit accounting* (pp. 12–35). Edward Elgar Publishing.
- Kitching, K. (2009). Audit value and charitable organizations. *Journal of Accounting and Public Policy*, 28(6), 510–524.
- Krishnan, R., Yetman, M., & Yetman, R. (2006). Expense misreporting in nonprofit organizations. *The Accounting Review*, 81(2), 399–420.

- Larcker, D., & Rusticus, T. (2010). On the use of instrumental variables in accounting research. *Journal of Accounting and Economics*, 49(3), 186–205.
- Lee, G., & Fargher, N. (2013). Companies' use of whistle-blowing to detect fraud: An examination of corporate whistle-blowing policies. *Journal of Business Ethics*, 114(2), 283–295.
- Lee, Y. (2019). Variations in volunteer use among human service organizations in the USA. *Voluntas*, 30(1), 208–221.
- Mangena, M., Li, J., & Taurigana, V. (2016). Disentangling the effects of corporate disclosure on the cost of equity capital: A study of the role of intellectual capital disclosure. *Journal of Accounting, Auditing & Finance*, 31(1), 3–27.
- Menchik, P., & Weisbrod, B. (1987). Volunteer labor supply. *Journal of Public Economics*, 32(2), 159–183.
- Mercer, M. (2004). How do investors assess the credibility of management disclosures? *Accounting Horizons*, 18(3), 185–196.
- Messamore, A., Paxton, P., & Velasco, K. (2021). Can government intervention increase volunteers and donations? Analyzing the influence of VISTA with a matched design. *Administration & Society*, 53(10), 1547–1579.
- Neely, D., & Trussel, J. (2015). The influence of a professional staff on automatic revocation of tax-exempt status. *Journal of Accounting and Finance*, 15(3), 27–38.
- Nesbit, R., Christensen, R., & Brudney, J. (2018). The limits and possibilities of volunteering: A framework for explaining the scope of volunteer involvement in public and nonprofit organizations. *Public Administration Review*, 78(4), 502–513.
- Pan, W., & Frank, K. (2003). A probability index of the robustness of a causal inference. *Journal of Educational and Behavioral Statistics*, 28(4), 315–337.
- Parsons, L. (2003). Is accounting information from nonprofit organizations useful to donors? A review of charitable giving and value relevance. *Journal of Accounting Literature*, 22, 104–129.
- Parsons, L. (2007). The impact of financial information and voluntary disclosures on contributions to not-for-profit organizations. *Behavioral Research in Accounting*, 19(1), 179–196.
- Parsons, L., Pryor, C., & Roberts, A. (2017). Pressure to manage ratios and willingness to do so: Evidence from nonprofit managers. *Nonprofit and Voluntary Sector Quarterly*, 46(4), 705–724.
- Paxton, P., Velasco, K., & Ressler, R. (2020). Does use of emotion increase donations and volunteers for nonprofits? *American Sociological Review*, 85(6), 1051–1083.
- Petrovits, C., Shakespeare, C., & Shih, A. (2011). The causes and consequences of internal control problems in nonprofit organizations. *The Accounting Review*, 86(1), 325–357.
- Pollak, T., Rooney, P., & Hager, M. (2001). *Understanding management and general expenses in nonprofits*. Working paper, The Urban Institute and Indiana University.
- Ressler, R., Paxton, P., & Velasco, K. (2021). Donations in social context. *Nonprofit Management and Leadership*, 31(4), 693–715.
- Rose-Ackerman, S. (1996). Altruism, nonprofits, and economic theory. *Journal of Economic Literature*, 34(2), 701–728.
- Saxton, G., & Neely, D. (2019). The relationship between Sarbanes-Oxley policies and donor advisories in nonprofit organizations. *Journal of Business Ethics*, 158(1), 333–351.
- Schulz, C., & Wilson, C. (2017, August 28). *Why record volunteer services?* Nonprofit Accounting Academy. <https://nonprofitaccountingacademy.com/record-volunteer-services/>
- Smith, D. (1994). Determinants of voluntary association participation and volunteering: A literature review. *Nonprofit and Voluntary Sector Quarterly*, 23(3), 243–263.
- Spence, M. (1973). Job market signaling. *Quarterly Journal of Economics*, 87(3), 355–374.
- Tinkelman, D. (1998). Differences in sensitivity of financial statement users to joint cost allocations: The case of nonprofit organizations. *Journal of Accounting, Auditing and Finance*, 13(4), 377–393.
- Tinkelman, D. (1999). Factors affecting the relation between donations to not-for-profit organizations and an efficiency ratio. *Research in Governmental and Nonprofit Accounting*, 10(1), 135–161.
- Tinkelman, D., & Neely, D. (2011). Some econometric issues in studying nonprofit revenue interactions using NCCS data. *Nonprofit and Voluntary Sector Quarterly*, 40(4), 751–761.
- US Census. (2023). *Current population survey, September 2021: Volunteering and civic life supplement, CPS-21*. <https://www2.census.gov/programs-surveys/cps/techdocs/cpssept21.pdf>
- Vantilborgh, T., Bidee, J., Pepermans, R., Willems, J., Huybrechts, G., & Jegers, M. (2011). A new deal for NPO governance and management: Implications for volunteers using psychological contract theory. *Voluntas*, 22(4), 639–657.
- Vecina, M., Chacon, F., Marzana, D., & Marta, E. (2013). Volunteer engagement and organizational commitment in nonprofit organizations: What makes volunteers remain within organizations and feel happy? *Journal of Community Psychology*, 41(3), 291–302.
- Verrecchia, R. (2001). Essays on disclosure. *Journal of Accounting and Economics*, 32(1–3), 97–180.
- Weisbrod, B., & Dominguez, N. (1986). Demand for collective goods in private nonprofit markets: Can fundraising expenditures help overcome free-rider behavior? *Journal of Public Economics*, 30(1), 83–95.
- Weiss, A. (1995). Human capital vs. signaling explanations of wages. *Journal of Economic Perspectives*, 9(4), 133–154.
- Whited, R., Swanquist, Q., Shipman, J., & Moon, J., Jr. (2022). Out of control: The (over) use of controls in accounting research. *The Accounting Review*, 97(3), 395–413.
- Williams, P. (1996). The relation between a prior earnings forecast by management and analyst response to a current management forecast. *The Accounting Review*, 71(1), 103–113.

- Wong, J., & Ortmann, A. (2016). Do donors care about the price of giving? A review of the evidence, with some theory to organise it. *Voluntas*, 27(2), 958–978.
- Yao, K. (2015). *Who gives? The determinants of charitable giving, volunteering, and their relationship*. Working paper, University of Pennsylvania.
- Yetman, M., & Yetman, R. (2012). The effects of governance on the accuracy of charitable expenses reported by non-profit organizations. *Contemporary Accounting Research*, 29(3), 738–767.
- Yetman, M., & Yetman, R. (2013). Do donors discount low-quality accounting information? *The Accounting Review*, 88(3), 1041–1067.
- Young, D. (1987). Executive leadership in nonprofit organizations. In W. W. Powell (Ed.), *The nonprofit sector: A research handbook* (pp. 324–342). Yale University Press.

How to cite this article: Beck, A. W., Garven, S. A., & Yetman, M. H. (2024). Do donors value volunteer commitment in assessing nonprofit effectiveness? *Contemporary Accounting Research*, 1–35. <https://doi.org/10.1111/1911-3846.12997>

APPENDIX: PRIMARY VARIABLE DEFINITIONS AND SOURCES

Variable	Definition
Variables of interest	
<i>Donations</i>	Private donations (from Part VIII, line 1f)
<i>Volunteers</i>	Number of volunteers (from Part I, line 6)
<i>UVolunteers</i>	“Unexpected” volunteers, measured as the residual from Model (2)
<i>EVolunteers</i>	“Expected” volunteers, measured as the predicted volunteers from Model (2)
<i>ProgRat</i>	Program expenses/total expenses (from Part IX, line 25, Columns A and B)
<i>GenGov</i>	Index ranging from zero (<i>weak governance</i>) to five (<i>strong governance</i>), defined as the sum of indicator variables for five Form 990 governance variables: audit committee (from Part XII, line 2c), majority independent board (from Part VI, line 1b/line 1a), no outsourcing of management functions (from Part VI, line 3), CEO salary review (from Part VI, line 15a), and accessible information on own website (from Part VI, line 18) identified by Boland et al. (2020)
Partitioning variables	
<i>Audit</i>	Indicator variable equal to one if the nonprofit obtains an independent audit (from Part XII, line 2b), and zero otherwise
<i>Credibility_{Audit}</i>	Partitioning variable for disclosure credibility set to high (low) if <i>Audit</i> is equal to one (zero)
<i>VolsVary</i>	NPO-level standard deviation of <i>Volunteers</i> reported over the time series
<i>Credibility_{VolsVary}</i>	Partitioning variable for disclosure credibility set to high (low) if the organizational-level standard deviation of <i>Volunteers</i> reported over the time series (<i>VolsVary</i>) is greater than (equal to) zero
<i>RestDon</i>	Net assets with donor restrictions (from Part X, line 28, Column B + line 29, Column B)
<i>RestDon/NA</i>	<i>RestDon</i> scaled by total net assets (from Part X, line 33, Column B)
<i>RestDon_{Pos}</i>	Partitioning variable for donor sophistication set to high (low) if net assets with donor restrictions (<i>RestDon</i>) is positive (zero)
<i>RestDon_{Med}</i>	Partitioning variable for donor sophistication set to high (low) if restricted donations scaled by net assets (<i>RestDon/NA</i>) is above (at or below) the median
<i>Complexity</i>	Index ranging from 1 (<i>not complex</i>) to 9 (<i>very complex</i>) based on the number of revenue sources reported at amounts greater than zero: federated campaigns, membership dues, fundraising events, related organizations, government grants, and donor contributions) (from Part VIII, lines 1a–f); program service revenue (from Part VIII, line 2g), investment income (from Part VIII, lines 3, 4, and 7d, Column A), and other revenue (Part I, line 11, Column B)

APPENDIX (Continued)

Variable	Definition
<i>Complexity_{Med}</i>	Partitioning variable for organizational complexity set to low, medium, and high if <i>Complexity</i> is below, at, and above the median, respectively
NPO characteristics	
<i>Age</i>	Number of years the NPO has been tax-exempt (from [Box A, tax year-end date, minus IRS RuleDate obtained from IRS Business Master Files on the National Center for Charitable Statistics website]/365)
<i>Assets</i>	Total assets (from Part X, line 16, Column B)
<i>Audit</i>	Indicator variable equal to one if the nonprofit obtains an independent audit (from Part XII, line 2b), and zero otherwise
<i>CashBasis</i>	Indicator variable equal to one if the nonprofit reports using cash basis accounting (from Part XII, line 1), and zero otherwise
<i>ContRev</i>	Total charitable contributions from private donors and others (e.g., foundations, corporations) (from Part VIII, line 1h)
<i>Dues</i>	Revenues from membership dues (from Part VIII, line 1b)
<i>Employees</i>	Number of employees (from Part I, line 5)
<i>FeedDon</i>	Donations from fundraising organizations (from Part VIII, line 1a)
<i>Fundraising</i>	Fundraising expenses (from Part IX, line 25, Column D)
<i>GovGrants</i>	Revenues from government grants (from Part VIII, line 1e)
<i>Industry</i>	Indicators for 26 NTEE one-digit industries (obtained from IRS Business Master Files on National Center for Charitable Statistics website)
<i>InvestRev</i>	Investment revenues (from Part I, line 10, Column B)
<i>LowQuality</i>	Indicator variable equal to one if the nonprofit reports zero fundraising expenses (<i>Fundraising</i> = 0), and zero otherwise
<i>OthRev</i>	Revenue from sources other than program, sales, and contribution revenues (sum of Part I, lines 10 and 11, Column B)
<i>SalesRev</i>	Program service and sales revenue (from Part VIII, line 2g)
<i>Small</i>	Indicator variable equal to one if the nonprofit reports less than \$1 million in total assets (from Part X, line 16, Column B), and zero otherwise
<i>ZeroOffPay</i>	Indicator variable equal to one if the nonprofit reports zero compensation paid to officers, directors, trustees, and key employees (from Part IX, line 5, Column A), and zero otherwise
Other	
<i>Year</i>	Indicators for year (from Box A, tax year-end date)

Note: All variables are collected from Form 990 unless otherwise indicated. Line item references are based on the 2016 Form 990. As described in Section 3, continuous variables (except *GenGov*) are logged in our regression models with values reset to negative or zero as appropriate.