



The Association of Female Leaders with Donations and Operating Margin in Nonprofit Organizations

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Abstract

We examine the impact of employing a female, versus a male, leader on future ($t + 1$) donations and operating margin using a sample of 4387 unique nonprofit organizations (NPOs) between 2011 and 2014. Using two-stage and matched sample designs, we find that NPOs headed by female leaders report higher future operating margins but lower future donations. We interpret these findings to mean that female leaders are more focused on fiscal responsibility than fundraising. We also find that female leaders with past fundraising experience attenuate lower future donations, and at commercial nonprofits, female leaders with prior for-profit experience contribute to even higher operating margins. Moreover, while female leaders identified as the founder of the organization increase future donations, they have no effect on future operating margins. Collectively, the results of our study should increase nonprofit boards' confidence in hiring female leaders thereby narrowing the gender disparity in leadership in the nonprofit sector. This study expands the extant literature by providing initial evidence on the effects of female leaders in NPOs thereby contributing to research exploring gender, diversity, management, and nonprofit executives.

Keywords Gender · CEO · Donation · Female · Fiscal responsibility · Fundraising · Women · Nonprofit · Operations

Introduction

This study explores the outcomes of having a female, versus a male, leader in U.S. nonprofit organizations (hereafter, NPOs or nonprofits). A company's leader is considered the face of the organization (Dean, 2020), is often conceptualized as the entity's brand (Bendisch et al., 2013), and plays an integral role in a firm's strategic actions and performance (Wang et al., 2016).¹ The call by policy makers and other stakeholders for increased female leadership in organizations

has motivated researchers and organizations to consider the role and impact that women leaders have in organizations (Mensi-Klarbach, 2014), but the focus has been primarily in the for-profit sector.

In the United States (U.S.), nonprofit organizations control more than \$8 trillion in assets, and account for 5.5 percent of the U.S. gross domestic product (GDP), while employing approximately 11 percent of the U.S. workforce, a majority of whom are women (Independent Morris et al., 2018; Sector, 2018). Females' communal traits also make the nonprofit sector a place where women can have a greater opportunity to lead; yet, the top nonprofit leadership roles continue to be male-dominated (Wang et al., 2019) with men holding 79 percent of the CEO positions for organizations with \$25 million in assets or greater (Guerrero, 2020; McLean, 2016). Additionally, the lack of women in nonprofit leadership positions, where female employees are well-represented in the workforce, has concerned many practitioners and policymakers (Jones & Jones, 2017; AAUW, 2018; Xie

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¹ In the nonprofit sector, the highest-ranking official can have many titles including CEO, executive director, president, chief professional officer (CPO), or simply director. For ease of exposition, we use the term leader to refer to the top salaried position in the NPO, regardless of official title.

& Pang, 2018). One way to mitigate this bias in leadership is to shed light on the outcomes of female leadership in nonprofits. Accordingly, we examine the impact of female leaders on the performance of primary concern to nonprofit stakeholders, namely the leader's ability to cultivate resources (i.e., attract donations) and manage those resources (i.e., maintain a healthy operating margin).

For-profit literature posits that female leaders improve firm performance (Jadiyappa et al., 2019), firm value (Ullah et al., 2019), financial reporting quality (Palvia et al., 2015), and governance (Jalbert et al., 2013). While these studies help inform the nonprofit sector, research on the effects of female leadership in nonprofits is needed to better understand the gender disparity in leadership in a sector that employs a high percent of females. We note that nonprofits in general, as well as the role of nonprofit leadership positions, differ from for-profit firms in substantial ways. First, while the predominantly female nonprofit workforce provides opportunities for internal promotions and advancement (McLean, 2016; Pynes, 2000), the small number of nonprofit female leaders could discourage aspiring women in the sector (Mento, 2014). Second, female demeanor is understood to be more aligned with philanthropic work, consistent with female leaders providing specific benefits to charity organizations (Williams, 2003).

Third, while for-profit leaders are focused on shareholder wealth vis-à-vis stock price and equity distributions, the primary goals of nonprofit organizations are to raise funds to provide services in a cost-effective manner, with no residual claimants to this success. Therefore, unique to the nonprofit sector, to be successful leaders must be able to both generate financial support and then use those resources wisely in the deployment of their mission (i.e., be fiscally responsible). These tasks are especially difficult given scarce human-capital and financial resources which are notorious in this sector, making the role of the nonprofit leader quite different from those in the for-profit world.

Given these differences, we believe it is an open and important empirical question as to whether or not gender influences nonprofit performance. We address this question by examining the impact of gender on two nonprofit performance metrics important to stakeholders: donations and fiscal responsibility. Donations represent contributions received from individuals and corporations, while fiscal responsibility is defined in terms of nonprofit operating margin (total revenues less total expenses scaled by total revenues).

In terms of our test variable, we use the term "gender" as it is defined and generally accepted in the social science literature, which states that the "gender" of a person is culturally and socially constructed (see Borna & White, 2003; Jennings & Brush, 2013). Specifically, "gender" is defined as a schema for the social categorization of attributes assigned

by society to individuals (e.g., female/women and male/men, Sherif, 1982). Borna and White (2003) document that many studies use the term "sex" and "gender" interchangeably, so while our study focuses on the "gender" construct, some of the articles we reference may not. We also acknowledge as a limitation of our study that our data provide for the categorization of leaders by sex (male or female) and therefore does not fully incorporate the societal definitions of gender as discussed by Borna and White (2003).

In addition to our main analyses, following studies in the corporate sector which suggest that prior experience and ownership moderate the leader's gender effect on firm performance (Eagly & Carli, 2007; Fitzsimmons et al., 2014), we look at whether female leaders' prior fundraising and for-profit firm experiences moderate our study's donations and operating margin measures, respectively. Further, relying on for-profit founding families' literature (Anderson & Reeb, 2003; Healy & Palepu, 2001; Kang, 2014), we study the unique impact of female leaders identified as the founder of the organizations with which they are affiliated.

This study seeks to address two key issues: (1) the economic impacts of female, versus male, nonprofit leaders and (2) whether female leaders' prior experience and founder designation moderate these economic effects. To test these questions, we employ a sample of 4387 unique, industry diverse U.S. nonprofits and test how organizations with female leaders perform in comparison to their male counterparts. We find that organizations with female leaders report lower future ($t+1$) donations, but higher future operating margins, consistent with a focus on fiscal responsibility in place of fundraising. In additional analyses we find that, despite lower overall fundraising, female leaders generate higher fundraising efficiency which indicates that, while organizations with female leaders are associated with lower levels of donations, they are more efficient in how they raise funds.

Our results also indicate that female leaders with specific fundraising experience mitigate lower future donations, while those with prior for-profit experience boost operating margin, but only at commercially-oriented nonprofits. Additionally, we document the positive impact of female founders on fundraising, but not operating margin. Finally, we test the response of program and administrative efficiency to gender, finding that while program efficiency (program expenses/total expenses) is no different between organizations with male and female leaders, administrative efficiency (general and administrative expenses/total expenses) is higher at organizations with female leaders. We interpret this to mean that our operating margin results are likely effectuated by reducing administrative spending. Collectively, the results of our study should increase nonprofit boards' confidence in hiring female leaders thereby narrowing the gender disparity in leadership in the nonprofit sector.

This study is important for a number of reasons. First, it contributes to various literature streams examining nonprofits including research exploring gender diversity, management performance, and nonprofit executives.² Second, knowing how female executives impact nonprofits is important given that society, regulators, and donors have raised concerns over the low percentage of females in leadership positions in a sector with such a large percentage female workforce (AAUW 2018; Pynes, 2000; McLean, 2016). The American Association of University Women (AAUW 2018) reports that while women are found to make up 75 percent of workers in education, health care, and social assistance sectors, they make up far less than 75 percent of leadership positions in these type of organizations. Furthermore, as the aging leadership population leaves the workforce, NPOs will need to fill executive positions with qualified applicants. Hiring female leaders to fill these vacancies will respond to society's call for women in leadership positions (Patz, 2018). The results of this study will, therefore, provide management with information about the pros (higher operating margin) and cons (reduced donations) of hiring a female leader as well as the benefits of their particular work experiences (fundraising and for-profit).

Hypotheses Development

Researchers have, for many years, been focused on the socially constructed gender differences between men and women leaders and how these differences impact an organization (see Jennings & Brush, 2013). Van Dijk et al., (2012) argue that the benefits of gender diversity are borne out of the leader's values and virtues. For-profit studies show firms with female CEOs report lower leverage in both private (Cole, 2013) and public companies (Faccio et al., 2016), are less likely to make corporate acquisitions (Huang & Kisgen, 2013) or overinvestment decisions (Ullah et al., 2020), are more likely to have less volatile earnings, to be in operation longer (Faccio et al., 2016), and attract lower cost of debt financing (Miah, 2019).

Whether and how this conservative, fiscally responsible approach to management demonstrated by female CEOs in for-profit entities helps explain the impact of female leaders in the nonprofit sector is unclear. First, the effects of female

leadership in the nonprofit sector are largely unexplored. Researchers in this area have focused on gender discrimination (LeRoux & Langer, 2016; Norris-Terrell et al. 2018), lack of female representation (Jones & Jones, 2017; Lee, 2019; Pynes, 2000; Xie & Pang, 2018), and board diversity (Buse et al., 2016). Second, managing an NPO can be extremely challenging in distinct ways. Compared to a typical for-profit entity, an NPO serves multiple constituencies, has fragmented business processes, and its goals are more complex and ambiguous (Jones, 2018).

Third, nonprofit managers are inherently different than for-profit managers (Fiolleau et al., 2020). In a survey sample of 53 managers each from nonprofit and for-profit entities, Fiolleau et al. (2020) report that nonprofit managers in their sample are less narcissistic, less entitled, less extroverted, and have a more externally oriented locus of control than the for-profit managers. Further, they self-select into the nonprofit sector motivated by intrinsic factors, such as a desire to serve others, rather than compensation (Lee, 2014; Ritz et al., 2016).

Entities hire executive leaders to successfully implement organizational goals and achieve positive outcomes. In nonprofits, donations and operating margins are important metrics in measuring a leader's success. Thus, we look at how female leaders affect nonprofits' "income," specifically, donations and operating margin. Then, we consider whether experience and founder designation affect this relationship. Given the exploratory nature of this study we make no directional predictions of the impact of female leaders on our dependent variables.

Donations

Charitable contributions in the United States exceeded \$440 billion in 2019 (a 4.2 percent increase from 2018) representing the highest dollar total to date (Giving USA Foundation, 2020), while total annual giving (from individuals, bequests, foundations, and corporations) has increased steadily since 1977 (except in 1987, 2008, 2009), according to Giving USA. As NPOs must compete for these resources, the leader, as the face of the organization, is ultimately responsible for securing adequate donations to achieve the nonprofit's mission.³ While some of the female leaders' skills/attributes (e.g., interpersonal skills, ethics, and low risk tolerance) could positively impact their ability to secure donations, other attributes (such as, lower confidence and less aggressiveness) could be detrimental in generating financial

² We are aware of three recent studies which investigate female executives at U.S. nonprofits. LeRoux and Langer (2016) report board involvement is less robust in firms with female, versus male, leaders. Norris-Tirrell et al. (2018) examine the variables that influence females reaching the CEO position and identify gender as one of those variables. Lee (2019) investigates and finds that female leaders are more likely to be hired in large nonprofits when the gender diversity on the board is between one-third and one-half female.

³ We acknowledge that the top nonprofit leader is not the sole fundraiser of the organization, other executives (such as development officers), or board members may also be tasked with this responsibility.

support from individuals, corporations, and individual donors. Moreover, lack of confidence and less aggressiveness (Coleman & Robb, 2009; Morris et al., 2006) may limit the amount of funding the female leader seeks and receives.

Further, female leaders' ability to raise funds may be inherently constrained as people tend to do business with others who are similar to themselves (Fitzsimmons et al., 2014). As the percentage of male leaders exceeds the percentage of female leaders in corporate settings (Fuhrmans, 2020), acquiring donations from male-dominated corporations and male donors with deep pockets may favor male leaders. Despite this, resources may shift to NPOs with female leaders as the ratio of female to male leaders on corporate boards increases (Buse et al., 2016; Cook & Glass, 2015).

Additionally, women may be viewed as less credible leaders than men (Eagly, 2007; Eagly, 2007; Eagly & Karau, 2002; Heilman, 2012; Heilman & Okimoto, 2007), and as perceived threats to the "old boys network" where fundraising deals are likely made (Fitzsimmons et al., 2014).⁴ While anecdotally we believe perceptions of female leaders have improved over the decades, LeRoux and Langer (2016) suggest a similar "boys club" atmosphere still exists in NPOs, where female leaders report a greater disparity between their preferred and actual board involvement in male-dominated boards.

The challenges in raising (or allocating) funds may also be due to deep-rooted unconscious biases (Madsen & Andrade, 2018). Research reports an increase in female venture capitalists in the United States, but a continued widening of the funding gap (Kanze et al., 2017; Geiger & Oranburg, 2018). Kanze et al. (2017) show that male-led startups raised five times more than female-led startups due to investors' biases and regulatory focus. Moreover, Geiger and Oranburg (2018) report females receive less funding than men when soliciting high amounts.

In sum, given that much of the above discussion is based on the for-profit literature, it is unclear whether nonprofit female leaders will cultivate more or less in future nonprofit donations. This leads to our first hypothesis, stated in the null:

Hypothesis 1: Female leaders are not associated with future donations.

⁴ Oakley (2000) defines "old boys' network," as "an informal male social system that stretches within and across organizations and excludes less powerful males and all women from membership." While we cannot guarantee that this "network" exists in the nonprofit sector, it seems likely that the donations to nonprofits (which often come from the corporate sector where this network refers) will be affected.

Operating Margin

The for-profit literature documents that firms with female CEOs are more conservative, have a lower risk tolerance, stronger governance, and overall better fiscal operations (see Ho et al., 2015; Palvia et al., 2015; Zeng & Wang, 2015; Faccio et al., 2016; Miah, 2019; Ullah et al., 2020). In particular, Faccio et al. (2016) finds, in comparison to male CEOs, firms with female CEOs are associated with lower leverage, less volatile earnings, and higher chance of survival.

Using a panel of U.S. commercial banks during the financial crisis, Palvia et al. (2015) find that banks with a female CEO hold more conservative levels of capital, and smaller banks with a female CEO are less likely to fail during a financial crisis, demonstrating the persistence of female CEOs and their ability to persevere in more precarious positions (Ryan & Haslam, 2007). Ho et al. (2015) also find that females' ethical sensitivity and monitoring nature leads to better governance through accounting conservatism. Using Australian bank data, Miah (2019) documents that banks reward firms employing female CEOs with lower cost of debt financing.

While this prior literature serves to inform our conjectures, as discussed above, nonprofit sector responsibilities are dissimilar from for-profits due to organizational structure, goals, funding sources, and clientele. Additionally, the source of funds (primarily donations and grants) and the fiscal responsibility (accountability) of those funds will likely be greater and more challenging, due to fewer qualified personnel coupled with greater competition for funding (Pynes, 2000; Giving USA Foundation 2018; Patz, 2018; Lee, 2019). Female leaders' ability to succeed may also be constrained by other challenges, such as board support. As boards hire and fire leaders (Norris-Tirrell et al., 2018), a well-run organization relies on the mutual support and alignment between the board and leadership on important issues (Cook & Glass, 2014, 2015; Matsa & Miller, 2011). Based on survey responses from board chairs and executives, Bernstein et al. (2016) document that female nonprofit leaders believe board chairs fail to remain open-minded when an oversight occurs and do not support them on important issues. While women leaders will likely have more support from boards with more female representation (Cook & Glass, 2014, 2015; Glass & Cook, 2016; Lee, 2019; Matsa & Miller, 2011), female leadership is grossly underrepresented on nonprofit boards (Mento, 2014; Patz, 2018; Pynes, 2000).

Given these challenges, it is possible that female leaders may work harder and thus perform better than their male counterparts to "prove" themselves in a man's world (Cole, 2013; Donovan, 2015) as they are often held to higher standards than their male counterparts (Haslam & Ryan, 2008; Kumar, 2010; Ng & Sears, 2017; Ryan & Haslam, 2007). It

is also probable that female leaders will be more effective at managing operations in nonprofits given that they are more risk averse, more conservative, and better at managing debt (Faccio et al., 2016; Palvia et al., 2015; Ullah et al., 2020; Zeng & Wang, 2015). It is equally likely that by employing these attributes of fiscal responsibility (more conservative, less risky), combined with other characteristics (lower self-confidence, less aggressiveness), a female leader could negatively impact an NPO's operating margin.

Collectively, considering the for-profit studies and the limited literature in the nonprofit sector, how a female will compare to her male counterpart in managing finances in this setting is unknown. Thus, we present our second hypothesis, stated in the null:

Hypothesis 2: Female leaders are not associated with operating margin.

Female Leaders' Prior Experience

Work experience provides knowledge and creates experts. For-profit research documents that prior experience in a task or industry improves performance (Bonner & Lewis, 1990; Brauer et al., 2014; Hammersley, 2006; Moroney & Carey, 2011), and is rewarded with higher compensation (Elsaid, 2015) as well as lower audit fees (Kalelkar & Khan, 2016). Under the pretext that fundraising is a learned skill, it is possible that leaders can benefit from "learning by doing," or "learning by transferring" (Brauer et al., 2014, 2). Thus, leaders who have developed their skills and built their own network from previous fundraising experiences may have a positive effect on future donations. On the other hand, if prior fundraising experience is tied to a specific organization, industry or region, it may not be transferable, and we would not expect prior experience to impact future performance. We study whether prior fundraising experience has a moderating effect on the relationship between female leaders and donations. This guides the first part of our third hypothesis, stated in the null:

Hypothesis 3A: Prior fundraising experience does not moderate the relationship between female leaders and future donations.

CEOs' orientation and perspectives towards their job are often centered on their prior work experience and often shape their strategic choices and future firm performance (Wang et al., 2016). It does this by shaping the information CEOs seek and notice, as well as how they interpret and utilize information to make decisions (Hambrick, 2007). Prior leadership experience is a significant factor in career trajectory in both the for-profit (Spencer et al., 2019) and nonprofit (Norris-Tirrell et al., 2018) sectors.

Wang et al. (2016) report consistent evidence that a CEO's prior career experience in an area, role, or position prepares CEOs, by equipping them with knowledge and confidence, to take strategically better actions, thereby improving firm performance. Moreover, the authors document that "experiences in the functional area help CEOs learn to process information, solve business problems, and navigate through ambiguous and complex information" (p. 46), particularly when the specific task experience and firm strategic action match.

Following this, a CEO's prior experience in the for-profit sector, where profitability is the single most important performance metric (Degeorge et al., 1999), could better equip the leader to manage resources in the NPO leading to greater operating margins. Despite this, in some organizational types, prior for-profit work experience may not impact female leaders ability to manage operating margins. This leads to the second part of hypothesis 3, stated in the null:

Hypothesis 3B: Prior for-profit experience does not moderate the relationship between female leaders and operating margin.

Female Founder

In many respects, for-profit family firms are akin to nonprofits in which the leader is the founder, in both cases the founder is in a position of influence. Founder status (i.e., ownership) encourages dedication and commitment to higher quality and performance (Jensen & Meckling, 1976). More specifically, ownership motivates individuals of family firms to perform better (Anderson & Reeb, 2003; Healy & Palepu, 2001; Kang, 2014), work longer hours and, on time-intensive tasks (Piva, 2018), manage resources more efficiently (Anderson et al., 2003), and provide higher quality reporting (Ali et al., 2007; Wang, 2006) than nonfamily firms (Kang, 2014).⁵ Additionally, founders tend to have longer tenure and board loyalty, and in the event of accounting irregularities, founders are less likely to be blamed, resulting in lower turnover of founders, than nonfounders (Leone & Liu, 2010). As female CEOs are more conservative and more risk averse than male CEOs (Farag & Mallin, 2018; Hoang et al., 2019; Zalata et al., 2019), they are more likely to focus on the longevity of the organization than on short-term strategies (Faccio et al., 2016).

At the same time, the entity is the founder's "baby;" thus, a founder may care more about the mission than the financial

⁵ A family-owned firm is one in which the members of the founding family continue to hold executive level positions in the firm (such as, board director or chair, CEO, CFO, or are blockholders) (see Anderson and Reeb 2003; Chen et al., 2008).

profits. As a result, the founder may be more willing to turn a blind eye to accounting irregularities (Leone & Liu, 2010) and be willing to take more risk (Kim & Lu, 2011). Founders are also more likely to “get-away” with additional risks given that their asset-specific capital is more difficult to replace (Palia et al., 2008) making the cost of terminating/replacing the founder (i.e., decrease in firm value) insurmountable (Leone & Liu, 2010).

Based on the above discussion, and given the complexity of nonprofits as previously mentioned, it is unclear whether female leaders who are also the NPO founder will strive for optimal overall performance by more aggressively seeking donations or whether they will provide better monitoring and governance over these resources than appointed leaders. As such, we make no directional prediction on whether the founder designation will mitigate any potential effects of the female leader presence on future donations or alter the impact on operating margins, leading to our final hypotheses, stated in the null:

Hypothesis 4A: Founder designation does not moderate the relationship between female leaders and future donations.

Hypothesis 4B: Founder designation does not moderate the relationship between female leaders and operating margin.

Sample and Models

Sample

We test our study’s models using an industry diverse set of 15,907 nonprofit firm-year observations between 2011 and 2014 purchased from Guidestar.org and matched with financial data from the IRS Statistics of Income (SOI) file. The IRS SOI data file is drawn from informational tax Form 990, required to be completed by nonprofit organizations reporting more than \$500,000 in total assets. As a result, our sample is comprised of the largest U.S. nonprofit organizations.

We purchased four years of data for 4676 unique nonprofits meeting the following criteria: (1) 501(c)(3) organized organizations, (2) long Form 990 filers (no 990EZ filers), (3) SOI filers, (4) donations greater than \$10 k, (5) number of employees greater than zero, and (6) nonmissing gender/name/compensation data.⁶ Four years of data yield 18,704 observations. From this 2673 are missing basic financial information and 124 are missing gender information resulting in our final sample of 15,907, of which 4944

organizations (or 31 percent) report employing a female leader.⁷ Note that while our determinants model includes all sample observations, our effects models are constrained to observations for which lagged control variables are available, reducing our model (2) and (3) sample size to 11,203.

In addition to our pooled sample of organizations with female and male leaders, for our effects analyses, we also construct a matched sample using propensity score matching (PSM) based on the variables included in our determinants model (1), following Bugeja et al. (2012).⁸ That is, each firm-year observation coded one for having a female leader is paired with a control coded zero for not having a female leader with the closest propensity score (nearest neighbor, without replacement) based on the variables included in our determinants model (*Total Assets*, *Program Efficiency*, *Commercial*, and *Industry*). This yields a matched sample of 6844 firm-year observations for analyses.⁹

We used this PSM matched sample as the basis for our experience models. Given that collecting background information for the leaders in our sample was an arduous task, we started with the 6844 female and male leader firm-years in our PSM sample. From this sample we were able to identify background information for 2261 female/male pairs providing for a matched sample of 4522 firm-years to test hypotheses 3 and 4.

Determinants Model

To model the determinants of female leaders, we draw on the significant body of for-profit research examining the association of female leaders with the financial and nonfinancial factors of publicly traded companies (Cole, 2013; Faccio et al., 2016; Ho et al., 2015; Huang & Kisgen, 2013; Palvia et al., 2015; Zeng & Wang, 2015). In our setting, we focus on three organizational characteristics: size, efficiency, and type as these fundamental elements of a nonprofit are most likely to highlight potential sociocultural gender role “micro-practices” unique to the nonprofit sector.

Studies document women are more likely to serve as leaders at organizations that are less desirable to men; specifically, those that are smaller and less complex, providing

⁶ GuideStar identifies gender by reviewing names provided on IRS Form 990. For example, Patricia would be coded female, Patrick male, and Pat unknown.

⁷ Anecdotally, this does not seem proportional to the potential qualified female candidates. A recent article in Wall Street Journal (WSJ) states that women earn the majority of college degrees and make up about half the workforce (Fuhrmans V., Feb. 6, 2020). Yet, as of December 2019, only 30 (6 percent) of the S&P 500 companies had female CEOs.

⁸ We use Stata statistical software to conduct our PSM and all other statistical analyses.

⁹ Given the shortcomings of propensity score matching (Shipman, Swanquist, and Whited 2017) in untabulated analyses we confirmed the robustness of our results to a simple matched sample based on industry, year and closest *Total Assets*.

opportunities for women in these organizations (Haslam & Ryan, 2008; Ryan & Haslam, 2007). As discussed above, female leaders take a softer, more practical approach to management, and are thus more conservative, detailed oriented, and efficient than male leaders in like positions (Facio et al., 2016; Khan & Vieito, 2013; Palvia et al., 2015). Based on this, we expect female leaders will be associated with organizations that are smaller and more efficient.

One of the goals of NPOs is to serve the needs of the community. According to Hansmann (1987), NPO typology is determined by the organization's primary sources of income and fit into two categories: donative or commercial. Donative NPOs receive a substantial portion of their income from donations and other contributions (e.g., Red Cross), while commercial NPOs generate income primarily from the sale of goods or services (e.g., YMCA). Based on the work of Williams (2003) which finds that female demeanor is more aligned with philanthropic work, and others (Park & Word, 2012; Wright, 2001) whose studies suggest that women are attracted to nonprofits to serve a greater good, we expect female leaders will be more likely in donative-type nonprofits. Following this, we posit that female leaders will be inversely related to commercial-type nonprofits.

To test our first stage determinants model, we employ logistic regression given that our dependent variable, *Female Leader*, is a 0/1 indicator variable equal to one for organizations identified by Guidestar.org as having a female leader.¹⁰ We include three variables aimed at capturing the organizational characteristics discussed above: size, efficiency, and type. We define size using the natural log of the organizations' *Total Assets*. We calculate efficiency as the ratio of program service expenses to total expenses or *Program Efficiency*. With respect to type, we define *Commercial*, following Aggarwal et al. (2012), as the ratio of program service revenues to total revenues, where larger ratios indicate more commercial operations.

In addition to our three test variables, we also include industry fixed effects and winsorize all variables at the 1 and 99 percent levels to adjust for outliers, culminating in the following first-stage determinants model:

$$\text{FemaleLeader}_i = \beta_0 + \beta_1 \text{TotalAssets}_i + \beta_2 \text{ProgramEfficiency}_i + \beta_3 \text{Commercial}_i + \text{Industryfixedeffects} + \alpha, \quad (1)$$

¹⁰ In untabulated analyses we identified changes in leader gender from male to female finding 196 changes (or 1.75 percent). Given the few number of changes identified, this analysis did not yield any meaningful results. That is, when we replace our *Female Leader* test variable with an indicator variable equal to one for organizations that changed from a male to a female leader, we fail to find any significant associations with either our *Donations* or *Operating Margin* response variables. We also fail to find any significant associations when we define our dependent variables in change form (from time t to $t+1$ as well as from time t to $t+2$), indicating a more long-term effect of gender. These results are noted as limitations of our study.

where model variables are described above and defined in Table 1.

Effects Models

To test Hypothesis 1 related to the impact of female leaders on donations received, we augment the standard donations demand model first introduced by Weisbrod and Dominguez (1986) and used extensively throughout accounting and economics literature in this area. Specifically, we add our *Female Leader* test variable to the donations demand model which includes the following known donation covariates: size (*Total Assets*), *Program Efficiency*, fundraising expenses, program and grant revenues, age, operating margin, and governance.

Our response variable, *Donations*, is drawn from line 1f of IRS Form 990 and includes donations made from individuals and corporations.¹¹ We define *Total Assets*, and *Program Efficiency* as above and following prior literature expect positive coefficients on these variables (Parsons & Trussel, 2008). *Fundraising Expenses* control for the effort an organization places on making the mission of the organization known and is defined as the log of fundraising expenses reported on Form 990. Following Tinkelman (1999) we expect a positive relationship between *Fundraising Expenses* and *Donations*.

Program Revenues and *Government Grants* are included to mitigate the crowding in or out effect of alternative revenue sources (Petrovits et al., 2011) and are similarly defined as logged program and grant revenues, respectively, reported on Form 990. We do not predict the sign of these relationships as prior literature is mixed with regard to the complementary or supplementary nature of these alternative revenue sources (Tinkelman & Neely, 2018). *Age* is defined as the logged number of years since the organization was established and is expected to be positively related to *Donations*. *Operating Margin* proxies for financial stability, found to be positively associated with donor giving, and is calculated as total revenues less total expenses scaled by total revenues following Chang and Tuckman (1991).¹²

Governance Index represents a 0–6 index equal to the sum of indicator variables for the following governance

¹¹ In additional analyses, we alternatively define our response variable as *Total Contributions* which includes all sources of outside support, including government funding, finding robust results.

¹² Our *Donations* models are robust to excluding *Operating Margin* as a control variable.

Table 1 Variable definitions (in alphabetical order)

Variable name	Definition	Data source
<i>Administrative Efficiency</i>	= General and administrative Expenses/Total Expenses	Form 990
<i>Age</i>	Log of the age of nonprofit in years based on the date of 501(c)(3) determination letter	IRS Business Masterfile
<i>Bonds</i>	= 1 for organizations reporting nonzero Long-Term Bond liabilities; 0 otherwise	Form 990
<i>Commercial</i>	= Program Service Revenues/Total Revenues	Form 990
<i>Complexity</i>	= 0 – 3 equal to the sum of indicator variables for nonzero <i>Government Grants</i> , <i>Donations</i> , and <i>Program Service Revenues</i> sources	Form 990
<i>Donations</i>	Log of “All other contributions, gifts, grants, and similar amounts not included above,” Line 1f from Part III	Form 990
<i>Female Leader</i>	= 1 if Guidestar.org has classified the leader of the organization as female; zero otherwise	GuideStar
<i>For-Profit Experience</i>	= 1 for leaders with prior for-profit work experience; 0 otherwise	Hand collected ^a
<i>Founder</i>	= 1 for leaders identified as the nonprofit founder; 0 otherwise	Hand collected ^a
<i>Fundraising Efficiency</i>	= <i>Donations</i> / <i>Fundraising Expenses</i>	Form 990
<i>Fundraising Expenses</i>	Log of Total Fundraising Expenses	Form 990
<i>Fundraising Experience</i>	= 1 for leaders with prior fundraising experience; 0 otherwise	Hand collected ^a
<i>Governance</i>	= 0 – 6 equal to the sum of indicator variables for the following governance variables reported on Section VI of the Form 990: conflict of interest policy, destruction of documents policy, CEO salary setting policy, existence of an audit committee, existence of a financial statement audit, and a policy for the governing body to review the Form 990 pre-filing	Form 990
<i>Government Grants</i>	Log of Government Grants	Form 990
<i>IMR</i>	Inverse Mills Ratio calculated from determinants model (1)	Calculated
<i>Operating Margin</i>	= (Total revenues – Total expenses)/Total revenues	Form 990
<i>Program Efficiency</i>	= Program Service Expenses/Total Expenses	Form 990
<i>Program Revenues</i>	Log of Program Revenues	Form 990
<i>Total Assets</i>	Log of year-end Total Assets	Form 990
<i>Total Contributions</i>	Log of Total Contributions	Form 990

^aSee endnote 14 for details on the hand collection of these variables

variables reported on Section VI of Form 990: conflict of interest policy, destruction of documents policy, CEO salary setting policy, existence of an audit committee, existence of a financial statement audit, and a policy for the governing body to review Form 990 pre-filing.¹³ We expect a positive relationship between governance and *Donations* following Boland et al. (2020). Control variables are all included with a one-year lag following prior literature which finds that donors need time to incorporate Form 990 information into their donation decision (Parsons & Trussel, 2008). Finally, we include industry and year fixed effects to control for the economic differences inherent between industries and across time.

We test model (2) using robust regression techniques (iteratively reweighted least squares), following Leone

et al. (2019), which assigns a weight to each observation with higher weights given to observations that meet the assumptions underlying standard multiple regression. Robust regressions also adjust for data outliers identified as a potential problem when working with IRS Form 990 data (Tinkelman & Neely, 2011), as well as clustered standard errors to adjust for residual correlation among observations belonging to the same nonprofit organization in our sample. In sum, our donations model is

$$\begin{aligned}
 \text{Donations}_i = & \beta_0 + \beta_1 \text{Female Leader}_{i-1} + \beta_2 \text{Total Assets}_{i-1} \\
 & + \beta_3 \text{Program Efficiency}_{i-1} + \beta_4 \text{Fundraising Expenses}_{i-1} \\
 & + \beta_5 \text{Program Revenues}_{i-1} + \beta_6 \text{Government Grants}_{i-1} \\
 & + \beta_7 \text{Age}_i + \beta_8 \text{Operating Margin}_{i-1} + \beta_9 \text{Governance}_{i-1} \\
 & + \beta_{10} \text{IMR} + \text{Industry fixed effects} + \text{Year fixed effects} + \alpha,
 \end{aligned} \quad (2)$$

where organization subscripts are omitted for ease of exposition, and model variables are described above and defined in Table 1.

Turning now to operating margin and our tests of Hypothesis 2, we define *Operating Margin* as above, following

¹³ We acknowledge that other combinations of governance mechanisms certainly exist. We adapted our measure from Boland et al. (2020) but find similar inferences if we alternatively define our governance index using various combinations of 3, 4, or 5 of these governance policies, as well as including all 17 measures included in Section XI of Form 990 (also following Boland et al., 2020).

prior literature which identifies this measure as the most appropriate measure of “profitability” in the sector (Chang & Tuckman, 1991). Model (3) also includes contemporaneous covariates found to explain nonprofit operating margin following Chang and Tuckman (1991).¹⁴ Specifically, we include firm size, complexity, bond liabilities, and prior year operating margin.

We include logged, year-end *Total Assets* to proxy for firm size and expect a positive relation following Chang and Tuckman (1991). *Complexity* is defined using the number of revenue sources (donations, government grants, and/or program service revenue) from which an organization receives revenue, and is an ordinal value between zero and three, following Petrovits et al. (2011), and posited to be increasing in operating margin. Prior literature notes that operating cash flows can substitute for external debt financing (Bowman, 2002; Calabrese, 2012). We, therefore, include *Bonds*, an indicator variable equal to one for organizations that have issued tax exempt bonds, and expect a negative coefficient. We also include prior year *Operating Margin* given that operating margin is known to be particularly sticky (Basu, DeVides, and Harris 2020). Finally, our model includes industry and year controls to capture underlying variation in the operating margins across different sectors of the nonprofit market, as well as over our sample period. In sum, our model to test the impact of female leaders on the operating margins of the organizations in our sample is formally

$$\begin{aligned} \text{Operating Margin}_i = & \beta_0 + \beta_1 \text{Female Leader}_{i-1} \\ & + \beta_2 \text{Total Assets}_i \\ & + \beta_3 \text{Complexity}_i + \beta_4 \text{Bonds}_i \\ & + \beta_5 \text{Operating Margin}_{i-1} \\ & + \beta_6 \text{IMR} + \text{Industry fixed effects} \\ & + \text{Year fixed effects} + \alpha, \end{aligned} \quad (3)$$

where organization subscripts are once again omitted for ease of exposition, and model variables are described above and defined in Table 1.

Hypothesis 3A incorporates female leader fundraising background believed to play a role in the leader’s ability to attract outside support. We interact *Female Leader* with an indicator variable, *Fundraising Experience*, equal to one for leaders identified as having prior fundraising experience. Leader background data were hand collected from

information available either on the organization’s web page, Guidestar.org, or other publicly available sources.¹⁵

To test Hypothesis 3B, we interact our *Female Leader* test variable with *For-profit Experience*, equal to one for leaders with prior for-profit experience, hand collected as described above. Finally, to test Hypothesis 4, related to leader founders, we define *Founder*, equal to one for leaders identified as the founder of the nonprofit organization, and zero otherwise, also hand collected following the same process described above.

Endogeneity

In this study, we seek to examine the effect of female leaders in nonprofits, namely the impact of gender on donations and operating margin. However, in doing so, we acknowledge the endogenous nature of these relationships. To address the issue of endogeneity in our study, we use both a two-stage modeling approach, as well as a matched sample design.

The two-stage approach first models the probability that an organization will have a female leader and then controls for the likelihood of a female leader using the Inverse Mills Ratio (IMR), following Heckman (1979). Specifically, we use logistic regression to model the determinants of female leaders. Then, using this model, we calculate an IMR control variable and include it as a bias correction term in our second-stage models. We calculate IMR as the ratio of the standard normal probability density function over standard normal cumulative density function. The benefit of the Heckman (1979) two-stage process is the ability to control for the likelihood that a nonprofit has a female leader in our second-stage models.

In addition to our models which include the IMR control variable to mitigate the potential effects of endogeneity, we

¹⁴ We employ contemporaneous controls in model (3) following prior literature which documents that current organizational characteristics impact current operating margin (Chang and Tuckman 1991). However, our results are robust to lagging model (3) control variables.

¹⁵ Specifically, two research assistants (masters-in-accounting students) hand-collected background information on sample leader’s work experience and whether they founded the NPO. Work experience was determined by mention of prior fundraising or for-profit work experience terms such as fundraising campaigns, fundraising goals reached, fundraising participation, for-profit firm name, for-profit work described. They used the following process in the order described: (1) scoured the organization’s website for information related to the leader, (2) searched third party nonprofit informational sources such as Guidestar.org, CharityNavigator.org, and CharityWatch.org, (3) performed a general internet search of the leader’s name and nonprofit affiliation. If evidence of prior fundraising experience (*Fundraising Experience*), for-profit work experience (*For-Profit Experience*), or founder designation (*Founder*) were identified, the leader was coded 1 for the respective background information variable and 0 otherwise. If the leader could not be found at all, the observation was left out of our sample. The authors independently verified the completeness and accuracy of the coding, by sample testing, and are satisfied with the results. Additionally, the background results are robust to alternatively coding observations with zeros for leaders who could not be identified.

also construct a propensity score matched (PSM) sample of female and male leader organizations using the variables outlined in our determinants model (described below). We match each treatment organization with a control organization with the closest propensity score (nearest neighbor, without replacement) and re-run our models.

Descriptive Statistics

Table 2 presents descriptive information on our full sample by industry, year, and size. In terms of the percentage of female leaders, we find that the overall sample mean is 31 percent, with Mutual Benefit organizations having the largest percentage of female leaders (50 percent, despite the very low N). Panel A industry descriptives note that Arts and Health both have 43 percent female leaders while Public and Societal Benefit has 40 percent.

Panel B of Table 2 reports our sample year breakdown which varies between 4,464 firm-year observations in 2013 to 3,056 in 2014 (due to partial year filings at the time of data collection). The female to male leader representation is fairly constant (about 30 percent) across firm-year observations in each year of our sample. We next present a breakdown of our sample by size in terms of *Total Assets* decile. Consistent with our expectations, Panel C shows the smallest organizations in our sample have a female leader most often (54 percent) declining to only 19 percent of organizations in the largest decile.

Panel D presents descriptive statistics for our model variables partitioned by female and male leader sub-samples. We find preliminary evidence that organizations with female leaders receive lower levels of donations yet report higher operating margins. We also find that female-run organizations are smaller and less commercial in nature; spend less on fundraising, bring in lower program revenues and government grants, and are relatively younger organizations. They also appear to have less developed governance systems, less complexity, and are less likely to issue bonds. We find no significant difference between female and male leader firms in terms of program efficiency. With respect to compensation, we find that the mean female pay of \$266,611 is significantly lower than the mean male pay of \$393,812.

Next, we compare the descriptive statistics for our hand collected, background test variables. As noted, our sample for these analyses is limited to 2261 female/male pairs providing for a matched sample of 4522 firm-years. Here, we find that male leaders have significantly more fundraising and for-profit work experience, as well as being identified as the founder of the organization more often. In particular, while we find that only 15 percent of the female leaders in our sample have prior fundraising experience, over half of the male leaders have a similar background. In terms of for-profit experience, we find about six (27) percent of sample

females (males) have this experience; and three (six) percent of female (male) leaders are identified as the founder of the organizations they serve.

While the results of our t-tests indicate significant differences in our sample between the characteristics of organizations run by female and male leaders, we also present effect sizes, using Cohen's *d*, to tell us how large these differences actually are. Cohen (1988) classifies small effect sizes as 0.2, medium as 0.5, and large as 0.8. Following this interpretation, we note small effect sizes between female and male run organizations in terms of size (total assets), program revenues, founder, for-profit experience, bond funding, commercial, and total compensation. We also find that male leaders are 0.55 standard deviations more likely to have prior fundraising experience, which is considered a medium effect size.

Finally, Panel E confirms that our covariates are balanced between the treatment and control groups in our PSM sample. That is, the Standardized Mean Differences of our treatment and control organizations are not significantly different from each other along the dimensions used for our PSM model.¹⁶

Results

Table 3 presents the results of our first-stage determinants model. Here, we find that smaller, more efficient organizations are associated with our test variable *Female Leader*. We also find that female leaders are more likely to be at less commercial organizations, consistent with our conjectures. We use these model results to calculate our *IMR* control variable included in our second-stage models. That is, using the results from our determinants model, we explore the impact of having a female leader on nonprofits' future donations and fiscal responsibility, after controlling for the likelihood of having a female leader in the first place.

Effects of Female Leaders

Table 4 reports results for Hypothesis 1, related to the impact of female leaders on future donations, after controlling for the likelihood of having a female leader (from our first stage model). Here, we find, across both our two-stage and matched sample models, that female leaders are associated with lower future donations. Control variables are generally consistent with prior literature, with the notable exception of the governance measure, in our pooled sample, which is insignificant. We note that *Governance* is significantly

¹⁶ Austin (2009) suggest that a standardized difference greater than 0.10 is indicative of imbalance.

Table 2 Female leader frequencies

Panel A: Industries						
Industry	Male leader frequency		Female leader frequency		Total	% Female
Mutual benefit	9		9		18	50%
Arts	592		455		1047	43%
Health	1021		760		1781	43%
Public and societal benefit	920		601		1521	40%
Human services	2462		1424		3886	37%
Education	1647		655		2302	28%
Environmental	376		136		512	27%
International	227		69		296	23%
Universities	1589		362		1951	19%
Hospitals	1961		441		2402	18%
Religious	159		32		191	17%
Total	10,963		4944		15,907	31%
Panel B: Years						
Year	Male leader frequency		Female leader frequency		Total	% Female
2011	2879		1236		4115	30%
2012	2953		1319		4272	31%
2013	3045		1419		4464	32%
2014	2086		970		3056	32%
Total	10,963		4944		15,907	31%
Panel C: Organization size						
Size (Total Assets) deciles	Male leader frequency		Female leader frequency		Total	% Female
1 (Smallest)	737		854		1591	54%
2	950		641		1591	40%
3	1016		575		1591	36%
4	1078		512		1590	32%
5	1127		464		1591	29%
6	1195		396		1591	25%
7	1140		450		1590	28%
8	1215		376		1591	24%
9	1223		368		1591	23%
10 (Largest)	1282		308		1590	19%
Total	10,963		4944		15,907	31%
Panel D: Variable descriptives						
	Female Leaders N = 4944		Male Leaders N = 10,963		t-tests	Effect size
	Mean	Median	Mean	Median	p-values	Cohen's d
Donations	11,542,681	1,465,522	13,582,626	2,001,374	0.0564*	0.0906
Operating Margin	0.07	0.05	0.06	0.04	0.0046***	0.0349
Total Assets	118,397,396	37,777,692	198,292,030	67,757,208	0.0000***	0.2104
Program Efficiency	0.83	0.84	0.83	0.84	0.3943	0.0146
Commercial	0.47	0.48	0.60	0.77	0.0000***	0.3484
Fundraising Expenses	792,581	149,268	1,139,987	216,859	0.0000***	0.1379
Program Revenues	35,469,321	3,261,471	72,786,190	16,580,217	0.0000***	0.2406
Government Grants	5,857,195	58,176	9,643,407	66,980	0.0080***	0.0540
Age	39.54	36.00	43.83	43.00	0.0000***	0.1931
Governance	5.51	6.00	5.58	6.00	0.0000***	0.0818

Table 2 (continued)

Panel D: Variable descriptives

	Female Leaders N = 4944		Male Leaders N = 10,963		t-tests	Effect size
	Mean	Median	Mean	Median	p-values	Cohen's d
<i>Complexity</i>	2.38	2.00	2.45	3.00	0.0000***	0.1173
<i>Bonds</i>	0.26	0.00	0.41	0.00	0.0000***	0.3231
<i>Total Contributions</i>	13,462,283	2,839,212	17,210,427	3,460,448	0.0000***	0.0872
<i>Fundraising Efficiency</i>	30.45	4.84	53.57	3.48	0.4075	0.0897
<i>Total Compensation</i>	266,611	198,407	393,812	285,215	0.0000***	0.3781
<i>Fundraising Experience^a</i>	0.15	0.00	0.52	0.00	0.0000***	0.5501
<i>For-Profit Experience^a</i>	0.06	0.00	0.27	0.00	0.0000***	0.3131
<i>Founder^a</i>	0.03	0.00	0.06	0.00	0.0000***	0.2823

Panel E: Propensity score matching covariate balancing

Mean values	Female leaders N = 3442	Male leaders N = 3442	Standardized Mean Difference ^b
<i>Donations</i>	12,008,240	12,058,272	-0.0007
<i>Operating Margin</i>	0.06	0.06	0.0120
<i>Total Assets</i>	119,052,912	118,851,668	0.0007
<i>Program Efficiency</i>	0.83	0.83	0.0180
<i>Commercial</i>	0.47	0.50	-0.0774
<i>Fundraising Expenses</i>	807,257	858,045	-0.0231
<i>Program Revenues</i>	34,212,510	36,057,446	-0.0168
<i>Government Grants</i>	5,812,976	8,080,656	-0.0297
<i>Age</i>	40.26	40.63	-0.0172
<i>Governance</i>	5.51	5.53	-0.0163
<i>Complexity</i>	2.39	2.41	-0.0342
<i>Bonds</i>	0.26	0.28	-0.0492
<i>Total Contributions</i>	13,453,351	14,620,267	-0.0299
<i>Fundraising Efficiency</i>	28.78	22.51	0.0333

*Significant at 10% level

**Significant at 5% level

***Significant at 1% level (two-tailed)

See Table 1 for variable definitions. Note that logged variables are presented in their unlogged form for ease of interpretation

^aSample size for these variables is 2261 Female leaders and 2261 Male leaders

See Table 1 for variable definitions

^bStandardized Mean Differences greater than 0.10 are considered indicative of a covariate imbalance (Austin, 2009)

positive when we exclude *Total Assets* from our model, consistent with *Governance* being highly correlated with organizational size.

Turning next to our operating margin response variable, we note that female leaders' focus on the operations of the organization, rather than fundraising, provides evidence of fiscal responsibility. That is, in Table 5 we consistently show a positive association between operating margin and *Female Leader* in both our two-stage and matched samples.

With respect to leader background, Table 6 presents results for our *Female Leader* test variable interacted with *Fundraising Experience* and *For-profit Experience*

(Hypothesis 3), while Table 7 includes results for NPO founders (Hypothesis 4). Beginning with Table 6, we find that past fundraising experience indeed moderates the relationship between female leaders and future donations, rejecting null Hypothesis 3A. That is, female leaders with explicit fundraising experience are able to reduce the negative impact on future donations. Turning to *For-Profit Experience*, here we fail to find that prior for-profit experience moderates the association between female leaders and the operating performance of the organizations in our full sample.

Table 3 Determinants of female leaders

Dependent variable: <i>Female Leader_t</i>	Coefficient z-statistic
<i>Total Assets_t</i>	− 0.221*** − 19.29
<i>Program Efficiency_t</i>	0.791*** 4.04
<i>Commercial_t</i>	− 0.298*** − 6.01
<i>Constant</i>	1.259*** 4.20
Industry fixed effects	YES
N	15,907
Model p-value	0.0000***
Pseudo R ²	0.0565

*Significant at 10% level

**Significant at 5% level

***Significant at 1% level (two-tailed)

See Table 1 for variable definitions. Variance Inflation Factors (VIFs) are below 5 for all variables

Table 7 provides results for our *Female Leader* test variable interacted with *Founder* in both our *Donations* (Hypothesis 4A) and *Operating Margin* (Hypothesis 4B) models. Results indicate that female leaders who are also the founder are able to increase future donations by mitigating the negative association between *Female Leader* and *Donations*. However, we fail to find that *Founder* moderates the relationship between *Female Leader* and *Operating Margin*. These results suggest that although female leaders, in general, are less focused on fundraising, those identified as the organizational founder generate more in donations.

Supplemental Analyses

Donative / Commercial Type Organizations

As previously described, not all nonprofits have the same revenue structure. To test the impact of nonprofit typology in our sample, we partition our *Donations* and *Operating Margin* results into organizations defined as donative or commercial, using the *Commercial* test variable defined above, cut on the sample median. Using these partitioned samples, we find that both groups report a negative (positive) relationship between female leaders and donations (operating margin). And while we find that the coefficient on our *Female Leader* test variable is larger in the donative (commercial) sub-sample for our *Donations* (*Operating Margin*) response model, the differences between these coefficients are not significantly different and therefore remain untabulated for brevity.

Table 4 Hypothesis 1—donations analyses

Dependent variable: <i>Donations_t</i>	Hypothesis 1	
	Pooled sample	PSM matched sample
	Coefficient t-statistic	Coefficient t-statistic
<i>Female Leader_{t-1}</i>	− 0.092*** − 3.20	− 0.054* − 1.68
<i>Total Assets_{t-1}</i>	0.747*** 59.18	0.579*** 50.23
<i>Program Efficiency_{t-1}</i>	0.756*** 5.90	1.353*** 8.15
<i>Fundraising Expenses_{t-1}</i>	0.140*** 54.36	0.142*** 41.12
<i>Program Revenues_{t-1}</i>	− 0.071*** − 25.90	− 0.053*** − 16.26
<i>Government Grants_{t-1}</i>	0.016*** 8.56	0.012*** 4.89
<i>Age_t</i>	0.002 0.14	− 0.022 − 0.96
<i>Operating Margin_{t-1}</i>	0.140*** 4.07	0.145*** 3.46
<i>Governance_{t-1}</i>	0.008 − 0.51	0.054*** 2.94
<i>IMR_{t-1}</i>	− 0.734*** − 14.25	
<i>Constant</i>	0.778*** 4.18	2.631*** 9.29
Industry & Year fixed effects	YES	YES
N	11,203	6884
Model p-value	0.0000***	0.0000***
Adjusted R ²	0.4388	0.4404

*Significant at 10% level

**Significant at 5% level

***Significant at 1% level (two-tailed)

See Table 1 for variable definitions. Variance Inflation Factors (VIFs) are below 5 for all variables

While our main results do not appear to be impacted by NPO type, we do, however, find interesting differences when we partition our background experience and founder models by NPO type. Beginning with our *Fundraising Experience* test variable, Panel A of Table 8 indicates that female leaders with prior fundraising experience appear to do the best job at mitigating the negative effects of female leaders in donative-type organizations. That is, organizations most focused on raising funds from outside the organization, as opposed to commercially run organizations primarily funded by program service revenues, appear to benefit the most from female leaders with prior fundraising experience.

Next, we partition our operating margin results into organizations defined as donative or commercial. Interestingly,

Table 5 Hypothesis 2—operating margin analyses

Dependent variable: <i>Operating Margin_t</i>	Hypothesis 2	
	Pooled sample	PSM matched sample
	Coefficient <i>t</i> -statistic	Coefficient <i>t</i> -statistic
<i>Female Leader_{t-1}</i>	0.007*** 3.94	0.005* 1.96
<i>Total Assets_t</i>	0.018*** 13.92	0.009*** 11.07
<i>Complexity_t</i>	−0.014*** −9.67	−0.016*** −7.80
<i>Bonds_t</i>	−0.005** −2.31	−0.010*** −3.04
<i>Operating Margin_{t-1}</i>	0.540*** 248.30	0.534*** 148.89
<i>IMR_t</i>	−0.066*** −8.42	
<i>Constant</i>	−0.034 −1.15	0.045 1.32
Industry & Year fixed effects	YES	YES
N	11,203	6884
Model p-value	0.0000***	0.0000***
Adjusted R ²	0.1580	0.1511

*Significant at 10% level

**Significant at 5% level

***Significant at 1% level (two-tailed)

See Table 1 for variable definitions. Variance Inflation Factors (VIFs) are below 5 for all variables

only in the commercial sub-sample, do we find that *For-profit Experience* significantly moderates the relationship between *Female Leader* and *Operating Margin*. We interpret this to mean that organizations run more commercially, or more like for-profit organizations, benefit from female leaders with prior for-profit experience.

With respect to our *Founder* test variable, Panel B of Table 8 partitions both our donations and operating margin models into commercial and donative sub-samples. Here, we find that our donations model results are driven by the donative organizations in our sample (first column). However, we continue to find that founder designation fails to moderate the relationship between female leader and *Operating Margin* in either NPO type.

Fundraising, Organizational, and Administrative Efficiency

In our second set of supplemental analyses, we test the response of fundraising, program, and administrative efficiency to leader gender. To test the impact of gender on the fundraising efficiency of the organizations in our sample, we

Table 6 Hypotheses 3—female leader background analyses

Dependent variable: defined in column heading	H3A: Donations _t	H3B: Operating Margin _t
	Coefficient <i>t</i> -statistic	Coefficient <i>t</i> -statistic
<i>Female Leader_{t-1}</i>	−0.167*** −3.35	0.007* 1.89
<i>Female Leader * Fundraising Experience_{t-1}</i>	0.203** 2.11	
<i>Female Leader * For-Profit Experience_{t-1}</i>		−0.001 −0.04
<i>Fundraising Experience_{t-1}</i>	0.027 0.50	
<i>For-Profit Experience_{t-1}</i>		0.009* 1.73
<i>Total Assets_{t-1}</i>	1.189*** 36.32	0.012*** 8.13
<i>Program Efficiency_{t-1}</i>	0.645*** 5.40	
<i>Fundraising Expenses_{t-1}</i>	0.151*** 35.89	
<i>Program Revenues_{t-1}</i>	−0.064*** −16.76	
<i>Government Grants_{t-1}</i>	0.018*** 6.03	
<i>Age_t</i>	−0.047 −1.57	
<i>Operating Margin_{t-1}</i>	0.450*** 5.02	0.652*** 91.46
<i>Governance_{t-1}</i>	0.030 1.02	
<i>Complexity_t</i>		−0.016*** −6.58
<i>Bonds_t</i>		−0.013*** −3.39
<i>Constant</i>	1.059*** 3.12	−0.150*** −5.52
Industry & Year fixed effects	YES	YES
N	4522	4522
Model p-value	0.0000***	0.0000***
Adjusted R ²	0.3929	0.1707

*Significant at 10% level

**Significant at 5% level

***Significant at 1% level (two-tailed)

See Table 1 for variable definitions

Variance Inflation Factors (VIFs) are below 5 for all variables

analyze the ratio of donations to fundraising expenses as a measure of the amount of donations generated by one dollar of fundraising expenses. Using our two-stage model, in

Table 7 Hypotheses 4—Female Founder Analyses

Dependent variable: Defined in column heading	H4A: Donations _{<i>t</i>}	H4B: Operating Margin _{<i>t</i>}
	Coefficient <i>t</i> -statistic	Coefficient <i>t</i> -statistic
Female Leader_{<i>t-1</i>}	-0.141*** -3.48	0.002 0.55
Female Leader * Founder_{<i>t</i>}	0.340* 1.69	0.020 1.19
Founder _{<i>t</i>}	0.091 0.79	-0.013 -1.35
Total Assets _{<i>t-1</i>}	0.610*** 37.83	0.009*** 7.07
Program Efficiency _{<i>t-1</i>}	1.260*** 6.35	
Fundraising Expenses _{<i>t-1</i>}	0.132*** 31.43	
Program Revenues _{<i>t-1</i>}	-0.048*** -12.08	
Government Grants _{<i>t-1</i>}	0.016*** 5.53	
Age _{<i>t</i>}	-0.004 -0.13	
Operating Margin _{<i>t-1</i>}	0.192*** 3.98	0.622*** 86.08
Governance _{<i>t-1</i>}	0.034 1.24	
Complexity _{<i>t</i>}		-0.015*** -5.51
Bonds _{<i>t</i>}		-0.007* -1.84
Constant	1.539 1.57	0.054 0.68
Industry & Year fixed effects	YES	YES
N	4522	4522
Model p-value	0.0000***	0.0000***
Adjusted R ²	0.4265	0.1794

*Significant at 10% level

**Significant at 5% level

***Significant at 1% level (two-tailed)

See Table 1 for variable definitions. Variance Inflation Factors (VIFs) are below 5 for all variables

untabulated analyses, we find a positive relationship between *Female Leader* and fundraising efficiency consistent with female leaders providing more donation output per dollar of fundraising expenses. We interpret this to mean that while organizations with *Female Leaders* are associated with lower levels of donations, they are more efficient in how they raise funds.

Next, we model both the program and administrative efficiency with which organizations are run, testing the impact of *Female Leader* on each response variable individually. We do so to better understand how female leaders help make the organizations with which they are affiliated more profitable. *Program Efficiency* is the ratio of program expenses to total expenses and *Administrative Efficiency* is the ratio of management and general expenses to total expenses. Both models include organizational size (*Total Assets*), *IMR*, industry, and year controls in addition to our *Female Leader* test variable. Interestingly, our program efficiency model fails to find a relationship between *Female Leader* and *Program Efficiency*. We therefore conclude that female leaders are neither increasing nor decreasing the percentage of expenses related to programs expended by the organization. We do, however, find a negative and significant relationship between *Administrative Efficiency* and *Female Leader*, indicating that female leaders are constraining the percentage of funds directed towards management and general expenses within the organization. We believe these are important insights into our main finding related to female leaders' ability to increase the future operating margin of the nonprofits with which they are affiliated.

Alternative Model Specification

In addition to our separate two-stage determinants and effects models, we also run our models simultaneously using two-stage least squares (2SLS) regression analysis, finding results consistent with our main study results (untabulated). Finally, given that executive pay is often a major expense item for smaller nonprofits, it is possible that higher operating margins and efficiency at female-run organizations are partly attributable to female leaders receiving lower salaries than their male counterparts. To rule out the possibility of pay driving our results, we include pay as an additional control variable in these models, finding robust results.

Discussion and Conclusion

This study takes initial steps in exploring the effects of female leaders in nonprofit organizations. While it may be common knowledge that women are underrepresented in leadership roles in the corporate sector, this bias in female representation may not be as obvious in the nonprofit sector given that women employees (in nonleader positions) are well-represented (AAUW 2018). This gross underrepresentation of female leaders in a sector in which overall women employees are in abundance is concerning (Jones & Jones, 2017, AAUW 2018). Research and data exploring female experiences in the nonprofit sector are sparse and research is needed to help shed light on this problem (AAUW 2018).

Table 8 Supplemental analyses—donative and commercial sub-samples

Panel A: Female leader background analyses

Dependent variable: defined in column heading	Donations _t		Operating Margin _t	
	Donative	Commercial	Donative	Commercial
	Coefficient <i>t</i> -statistic	Coefficient <i>t</i> -statistic	Coefficient <i>t</i> -statistic	Coefficient <i>t</i> -statistic
Female Leader_{t-1}	-0.219*** -3.36	-0.181*** -3.04	0.011 1.22	0.001 0.19
Female Leader * Fundraising Experience_{t-1}	0.553** 4.14	0.014 0.13		
Female Leader * For-Profit Experience_{t-1}			-0.014 -0.60	0.029*** 2.81
<i>Fundraising Experience_{t-1}</i>	-0.013 -0.17	0.050 0.79		
<i>For-Profit Experience_{t-1}</i>			0.009 0.83	0.003 0.80
<i>Program Efficiency_{t-1}</i>	3.258*** 13.68	-0.544 -1.58		
<i>Total Assets_{t-1}</i>	0.608*** 30.08	0.416*** 10.17	0.022*** 6.58	0.007*** 5.71
<i>Fundraising Expenses_{t-1}</i>	0.155*** 27.11	0.089*** 16.56		
<i>Program Revenues_{t-1}</i>	-0.007* -1.80	0.286*** 7.42		
<i>Government Grants_{t-1}</i>	0.020*** 5.61	0.019*** 4.47		
<i>Age_t</i>	-0.079** -2.27	0.051 1.26		
<i>Operating Margin_{t-1}</i>	0.313*** 3.69	0.437* 1.86	0.507*** 37.79	0.604*** 57.04
<i>Governance_{t-1}</i>	0.107*** 3.20	-0.048 -1.19		
<i>Complexity_t</i>			-0.043*** -8.31	0.001 0.22
<i>Bonds_t</i>			-0.016 -1.40	-0.005* -1.87
<i>Constant</i>	-0.178 -0.49	0.538 1.06	-0.218*** -3.60	-0.116*** -5.15
Industry & Year fixed effects	YES	YES	YES	YES
N	2597	1925	2597	1925
Model p-value	0.0000***	0.0000***	0.0000***	0.0000***
Adjusted R ²	0.4436	0.3858	0.4265	0.1794

Panel B: Female Leader Founder Analyses

Dependent variable: <i>Donations_t</i>	<i>Donations_t</i>		<i>Operating Margin_t</i>	
	Donative	Commercial	Donative	Commercial
	Coefficient <i>t</i> -statistic	Coefficient <i>t</i> -statistic	Coefficient <i>t</i> -statistic	Coefficient <i>t</i> -statistic
Female Leader_{t-1}	-0.129*** -2.64	-0.151*** -2.79	0.002 0.21	0.001 0.27

Table 8 (continued)

Panel B: Female Leader Founder Analyses

Dependent variable: <i>Donations_t</i>	<i>Donations_t</i>		<i>Operating Margin_t</i>	
	<i>Donative</i>	<i>Commercial</i>	<i>Donative</i>	<i>Commercial</i>
	Coefficient <i>t</i> -statistic	Coefficient <i>t</i> -statistic	Coefficient <i>t</i> -statistic	Coefficient <i>t</i> -statistic
<i>Female Leader*</i>	0.445*	0.219	0.013	0.010
<i>Founder_{t-1}</i>	1.91	0.76	0.35	0.74
<i>Founder_{t-1}</i>	0.227*	−0.068	−0.025	−0.003
	1.78	−0.38	−1.24	−0.33
<i>Program Efficiency_{t-1}</i>	2.977***	−0.493		
	13.64	−1.55		
<i>Total Assets_{t-1}</i>	0.547***	0.456***	0.015***	0.005***
	29.32	12.08	5.32	4.89
<i>Fundraising Expenses_{t-1}</i>	0.151***	0.078***		
	26.76	14.49		
<i>Program Revenues_{t-1}</i>	−0.003	0.304***		
	−0.77	7.53		
<i>Government Grants_{t-1}</i>	−0.022***	0.023***		
	−6.19	5.18		
<i>Age_t</i>	−0.063*	0.089**		
	−1.82	2.23		
<i>Operating Margin_{t-1}</i>	0.212***	−0.043	0.486***	0.618***
	4.01	−0.50	35.97	56.98
<i>Governance_{t-1}</i>	0.098***	−0.069*		
	3.00	−1.83		
<i>Complexity_t</i>			−0.036***	−0.002
			−6.61	−0.62
<i>Bonds_t</i>			−0.009	−0.004*
			−0.76	−1.69
<i>Constant</i>	1.068	0.195	−0.006	0.073
	1.17	0.14	−0.04	1.26
Industry & Year fixed effects	YES	YES	YES	YES
N	2597	1925	2597	1925
Model p-value	0.0000***	0.0000***	0.0000***	0.0000***
Adjusted R ²	0.4101	0.4642	0.2261	0.2695

*Significant at 10% level

**Significant at 5% level

***Significant at 1% level (two-tailed)

See Table 1 for variable definitions

Variance Inflation Factors (VIFs) are below 5 for all variables

Below, we summarize our results and discuss implications for nonprofits. While our results are informative in an under-researched area, they are subject to limitations. We discuss these limitations as well as opportunities for future research in this section.

Using a sample of 15,907 firm-year industry diverse observations, we find that female leaders are more likely to be present in NPOs that are smaller, more efficient,

and less commercial. We also find organizations employing female leaders report lower future donations, but higher future operating margins consistent with a focus on operations and controlling administrative expenses in place of fundraising. The results suggest that nonprofits with a strong donation stream but need help managing resources, may benefit from hiring a female leader. Our results are consistent with studies which find that female

leaders exhibit lower confidence and less aggressiveness (Coleman & Robb, 2009; Farag & Mallin, 2018; Huang & Kisgen, 2013; Malmendier et al., 2011; Morris et al., 2006), which may make them less successful fundraisers (Geiger & Oranburg, 2018), while providing more focus on operational goals. Future research in this sector could explore whether women face more pressure than men to produce operating results, or whether women leaders are more oriented towards accountability; and if so, what some of the potential underlying reasons may be.

Study results also indicate that female leaders with specific fundraising experience are able to mitigate the reduction in future donations. This is consistent with research which documents that leaders benefit from past job experiences (Braurer et al. 2014) and suggests that females may be able to use past experiences to cultivate fundraising networks which aid their ability to attract donations. Nonprofits seeking to hire female leaders while maintaining a strong funding stream could require prior fundraising experience to help mitigate potentially lower donations associated with female leadership. We also find that prior for-profit experience increases the positive effect of female leaders on operating margin; however, this effect is limited to organizations classified as commercial in nature. Therefore, nonprofits who operate similar to a for-profit organization should consider seeking female leaders with prior for-profit experience.

Finally, we find that female founders have a positive effect on fundraising, but not operating margin. This is an interesting finding as being the founder of a nonprofit means that the organization did not appoint you. As such, the founder has a unique association with the NPO that may impact the input, process, and outcomes of the NPO. On one hand, female founders are not subject to the selection process and do not have to overcome the glass ceiling, sociocultural practices, or discredited gender stereotypes held by board members and others, in contrast to the way appointed leaders likely do. On the other hand, founders are passionate and are internally motivated towards securing support for their organizations. We believe this tension makes our findings even more enlightening.

Despite these results, we acknowledge limitations to our study. First, as discussed above, our data do not include leader characteristics such as education, networking, or tenure. These variables could influence our analyses, and without them our results may misstate the impact of gender on nonprofit operations. Likewise, our data do not include gender data for directors or executives other than the top leader. It is possible that key members of the board or executives such as the CFO or development officer may play an even bigger role in our outcome variables. These data limitations present an opportunity for future research in this area using more detailed background information for a wider set of executives.

Second, given our sample's short time-series we are only able to identify approximately 200 changes in gender. Future research could explore operating outcomes in the wake of a gender change. Additionally, while our sample includes 15,907 nonprofit firm-years in our determinants model, and 11,203 firm-years in our effects model, given that we draw these samples from the IRS SOI data file, these organizations are larger than many other nonprofit organizations. That is, as the SOI data file is comprised of organizations reporting more than \$500,000 in total assets, they are inherently large in size. This restricts our results from being generalizable to smaller nonprofit organizations not included in the SOI data file. Additionally, our data relate to U.S. nonprofit organizations and we are therefore unable to generalize our findings across different countries and cultures. Costa et al. (2001) discuss the variation in personality traits across cultures providing a springboard for future research which considers gender differences in countries and cultures outside of the U.S.

Finally, while we have done our best empirically to rule out the effects of endogeneity in our sample, we acknowledge that reverse causality cannot be completely eliminated in our analyses. As a result, we encourage additional research in this area to expand and refine our understanding of nonprofit leader gender as better and more detailed data become available.

Notwithstanding these limitations, this study contributes to research exploring gender, diversity, management, and nonprofit executives and is the first to provide a comprehensive look at the effect of female leaders in nonprofit organizations. Understanding how female leaders impact nonprofits is important to the sector as society, regulators, and donors are demanding gender equality, particularly in leadership positions. Specifically, we provide practitioners and management with information about the potential pros (higher operating margins) and cons (reduced donations) of hiring a female leader, as well as the benefits of particular work experiences. This may increase nonprofit boards' confidence in hiring female leaders thereby narrowing the gender disparity in leadership in the nonprofit sector. Further, our results may aid management in their hiring practices as well as understanding how to best mentor and support female leaders in the nonprofit sector. Overall, this study takes initial steps in exploring the impact of the prior experiences and founder designation of female leaders in nonprofits; future studies could examine other nonprofit leader characteristics.

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Data Availability The gender data are proprietary; it was purchased from GuideStar, Inc.

Declarations

Conflict of interest Disclosure of potential conflicts of interest—there is no conflict or competing interest in this study. As this is an archival study, it did not involve human subjects and thus informed consent was not applicable.

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