

Financing of Nonprofits and Social Enterprises

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To Kirsten, Sixten, Linnea and Klara

Foreword

This volume is the result of a research project carried out at the Department of Finance at the Stockholm School of Economics (SSE).

This volume is submitted as a doctor's thesis at SSE. In keeping with the policies of SSE, the author has been entirely free to conduct and present his research in the manner of his choosing as an expression of his own ideas.

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It all started with a book. Bill Easterly's "The White Man's Burden: Why the West's efforts to aid the rest have done so much ill and so little good" encouraged me to leave the familiar territory of investing purely for financial returns and to embark on a quest for ways to invest in the best solutions to the biggest problems.

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There are times in life when everything feels like an uphill struggle, such as the final stretch of my PhD. At that point, I was deeply impressed by the determination of skipper Jimmy Spithill, who went on to win the 34th America's Cup by 9-8 for the U.S., having lagged the Kiwis by 1-8. Similarly, the new chess world champion — 22-year old Magnus Carlsen from Norway — taught us all to think big and constantly challenge the status quo.

Last, but not least, I would like to thank my beautiful wife for her support throughout this adventure and my three amazing children for showing me that everything must be questioned all the time (“Which mommies give birth to dogs?”). You are an endless source of inspiration!

A handwritten signature in black ink, reading "Andreas Nilén". The signature is written in a cursive, flowing style.

Munich, January 2014

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Social Finance

*In philanthropy, excellence is self-imposed.
Unless you demand outstanding performance from yourself,
no one else will demand it of you.*

J.L. FLEISHMAN AND T.J. TIERNEY IN "GIVE SMART"

1 Introduction

This thesis contains three research papers in social finance, a field that studies financing issues of organizations aiming to solve social problems. Social finance is a broad topic that encompasses different organizational forms as well as a wide range of social problems. It relates to several strands of academic literature, including corporate finance, nonprofit finance and philanthropy.

The collective knowledge of this research area is still limited, despite the size and importance of the sector within the economy. In the U.S., for example, charitable donations amounted to \$290 billion annually in 2010 (Giving USA 2011). The workforce of the U.S. nonprofit sector accounts for 9.2% of the economically active population and in many European countries, it accounts for more than ten percent Salamon (2010). Nonprofit organizations deliver impor-

tant services to society and enjoy preferential tax treatment in most countries. It is in the interest of tax payers, donors and beneficiaries that they operate effectively. Against this background, it is worrisome that public trust in nonprofit organizations is low. A recent survey found that 26% of Americans “do not trust charities”¹. Unfortunately, concerns about the governance of nonprofit organizations may well be justified. According to the Association of Certified Fraud Examiners, nonprofit organizations lose an average of six percent of their revenue to fraud every year. Applying this percentage to the nonprofit sector suggests that the loss is approximately \$40 billion each year (Greenlee et al., 2006). Furthermore, the problem is amplified by the lack of transparency of the sector. Although the U.S. requires nonprofit organizations to disclose detailed financial information, many countries, including Sweden and Germany, do not.

Alternatives to nonprofit organizations are emerging through organizational innovation. The convergence of profit-oriented activities and pro-social activities has led to some organizations adopting both social and financial goals. For example, corporate social responsibility (CSR) is now a well-established concept among firms. Similarly, the emergence of social enterprises, for-profit firms pursuing social goals, is beginning to change the landscape of the nonprofit sector. The idea of hybrid organizations is criticized by some people and praised by others. For example, Milton Friedman claims that “...there is one and only one social responsibility of business—to use

¹CouponCodes4u.com, Jan 18, 2011. The survey was conducted on 7,587 members of the U.S. public.

its resources and engage in activities designed to increase its profits so long as it stays within the rules of the game...” (Friedman, 1962). On the other hand, the Obama administration supports investments in social enterprises through a series of domestic and international programs worth more than \$1 billion.² Nonetheless, the underlying economics for how new organizational forms can create better outcomes for donors, investors and beneficiaries are not yet fully understood.

In this introduction, I present existing research and explain how each of my papers fill an important gap. I begin by studying internal financing issues and the decision by nonprofits to save. Thereafter, I discuss external financing and the agency issues that arise when funders transfer the control to a manager. Finally, I consider the role of organizational innovation and how it can benefit investors seeking both social and financial returns.

Throughout this thesis, I define *nonprofit organizations* (or *nonprofits*) as U.S tax-exempt public charities under section of the Internal Revenue Code 501(c)3. This definition includes all publicly-funded operating charities, but excludes grant-making organizations, such as foundations.

²The White House blog (www.whitehouse.gov/blog/2013/06/07)

2 Internal Financing

Existing literature

The importance of internal financing is widely recognized by academic scholars of nonprofit organizations. Significant attention has been devoted to the determinants and effects of wealth accumulation. On the positive side, Hansmann (1992) argues that wealth accumulation reduces the financial risk of nonprofits.³ Lumpy donations and economies of scale in fundraising campaigns may justify the creation of a temporary financial buffer to smooth out expenditures. Furthermore, the effects of unexpected financial shocks to either revenues or expenses can be alleviated through accumulation of a financial buffer. Keating et al. (2005) finds that financial vulnerability is indeed a major problem for nonprofits and that in 2000, 7% of U.S. nonprofits organizations were insolvent (liabilities exceeded assets). Hansmann (1992) also claims that wealth accumulation improves the quality of social output. Internal financing gives nonprofits increased independence from outside demands, which enables them to carry out unpopular projects without risking a short-term reduction in revenues.

There are also scholars who claim that wealth accumulation has negative effects. For example, some argue that the distribution of social output over time should be more short-term focused. An often cited argument is that “...nonprofits operate to serve pressing needs today and that accumulating cash shortchanges today’s needs

³The paper is focused on university endowments, but many of the arguments can be generalized to other types of organizations.

for unknown future needs” (Young, 2007). Fremont-Smith (2002) argues that the tax payers, who subsidize these organizations through tax benefits, “have an immediate right to a real return”. Hansmann (1992) lists two additional arguments in favor of spending in the short term. First, saving instead of spending may unfairly penalize current generations if the overall economic growth will continue and, as a result, make future generations wealthier than today’s. Second, future demand may decline due to demographic shifts, competition or the emergence of new technologies.

Academics have also studied which factors influence an organization’s internal financing decisions. Hansmann (1992) argues that wealth accumulation is “...at least in part a consequence of self-interested or short-sighted action by [the managers]”. Most empirical papers on nonprofit wealth focus on agency issues as a driver of wealth. Fisman and Hubbard (2005) finds that a weaker state-level governance leads to higher levels of wealth and interpret this as an indication of agency issues. Their argument is based on the assumption that it is easier for managers to “steal” from financial assets as opposed to stealing from revenues. Core et al. (2006) studies three possible motives for accumulation of “excess” wealth. The authors define excess wealth as the difference between actual wealth and a predicted value based on a regression of wealth on various organizational characteristics. They reject that excess wealth is built up in anticipation of growth opportunities or due to superior firm-specific monitoring that would make donors less concerned about agency issues. Instead, the authors find a strong correlation between management compen-

sation and excess wealth and interpret this as an indication that the agency motive is a main driver of wealth accumulation.

The arguments above illustrate that a primary objective of non-profit saving is the creation of a financial buffer to fund future operations (as opposed to investment in production capacity). However, little is known about the dynamics of how organizations divert income towards accumulating financial wealth over time. All organizations must decide every year how much to save and how much to spend. This decision depends on their preferences over the distribution of spending over time. Firstly, organizations must have a view on how much a dollar spent tomorrow is worth in terms of one dollar spent today (the subjective discount rate). Secondly, organizations may change their spending level if there is a change in the cost of spending one dollar tomorrow relative to today (the intertemporal elasticity of substitution). Such price differences are captured by the interest rate that an organization earns on its savings. For example, organizations that prefer a smooth spending level over time will react less to a change the interest rate (and vice versa). There is no paper to date that considers these preferences or the role of financial returns on the saving decision.

Contribution of Paper 1

The first paper in this thesis studies the intertemporal preferences that govern the spending decision of nonprofit organizations. I develop a dynamic model for nonprofit spending by employing the standard consumption Euler model to estimate the the subjective dis-

count rate and the elasticity of intertemporal substitution. I also extend this model to allow for heterogeneous parameters with regards to organizational characteristics. Using a large panel of U.S. nonprofits, I find that the subjective discount rate is decreasing in donation dependency and organizational size. The elasticity of intertemporal substitution is increasing in donation dependency and decreasing in size. My results are consistent with charitable donations giving rise to agency issues (which supports the findings of Core et al. (2006)) and adjustment costs increasing with size.

3 External Financing

3.1 Governance

Existing literature

External financing of nonprofit organizations differs markedly to for-profit firms. Nonprofits can not issue equity, but can instead raise donations, which are a form of revenues under nonprofit accounting. Nonetheless, there are still many issues that are shared by the two organizational forms. A common set of issues originates from the principal-agent problem that arises when a principal (the funder) allocates formal control to a manager (the agent) who may have different interests as well as superior information. The principal cannot directly ensure that the agent is always acting in its (the principal's) best interests. *Moral hazard* can take many forms, such as the extraction of private benefits, shirking and the pursuit of pet projects.

The academic literature on corporate finance has generated a wealth of knowledge of how problems of agency can be addressed. For example, the board of directors monitors the performance of managers and shareholders who are unsatisfied with the actions of the board can vote to replace its directors. Furthermore, the actions of managers are typically aligned with shareholder interests by linking management compensation to specific performance measures. The level of debt can be raised to prevent the misuse of excess cash (Jensen, 1986). Finally, an underperforming firm runs the risk of being taken over by a competitor. (See Shleifer and Vishny (1997) for a survey of corporate governance mechanisms.)

In contrast, nonprofits have fewer tools at their disposal to mitigate agency issues. Firstly, nonprofits pursue non-financial and often multiple goals. Performance is not a well-defined concept for most nonprofits.⁴ This leads to a lack of verifiable performance measures, which makes monitoring difficult for the board of directors.

Secondly, the lack of performance measures prohibits effective pay-for-performance contracts (Weisbrod, 1989). Hallock (2002) studies the link between managerial compensation and performance in nonprofits and confirms that there is no link between pay and performance.⁵

Thirdly, nonprofits do not have owners that can vote to replace directors and as a result boards are typically self-perpetuating (Hans-

⁴The formal goal of a nonprofit is to fulfill its stated mission (Childress et al., 2004).

⁵Incentive contracts were made permissible in the US in 1987 by the Internal Revenue Services (Steinberg, 1990).

mann, 1980). Active participation of directors in the responsibilities and duties of the board is far from given in nonprofit organizations (Brown et al., 2012). In fact, Miller (2002) shows that board members tend to monitor in ways that reflect their professional or personal competencies rather than paying attention to measures that would indicate progress toward mission-related goals and initiatives. The lack of formal ownership also prevents indirect governance in the form of takeovers of underperforming nonprofits (Bowman, 2002).

Fourthly, the use of debt is less common than in for-profit firms. According to Denison (2009), many traditional charitable service organizations “...are hesitant to even hold a mortgage”. Furthermore, his findings suggest that mortgages and tax-exempt debt is used predominantly to finance fixed assets, such as property and equipment. Bowman (2002) studies the determinants of the leverage ratio in nonprofits (total liabilities divided by total assets). Despite some issues of endogeneity, the author claims to find evidence that debt is indeed used to reduce the risk of managerial theft in accordance with Jensen (1986).

Notwithstanding the limited access to traditional governance mechanisms, nonprofits have two unique mechanisms that for-profit firms do not have: the non-distribution constraint and restrictions on the use of donations. The *non-distribution constraint* prohibits a nonprofit from distributing any part of its profits to officers or other insiders and signals to donors that their funds will be used towards fulfilling the stated purpose (Hansmann, 1980). This restriction provides some protection against moral hazard and

can generate a competitive advantage in the market for donations if donors feel protected by the nonprofit status of the organization (Glaeser and Shleifer, 2001). The second unique governance tool is restrictions placed on donations. Donations can be thought of as one party (the customer) purchasing a good on behalf of a third party beneficiary (the recipient). This was first outlined in Hansmann (1980), who concluded that customers of nonprofits are typically in a poor position to evaluate the quantity and quality of goods delivered. This leads to some donors placing restrictions as to how and when their contribution can be used (Calabrese, 2012). Given that managers are likely to have superior information about how to use the resources most effectively, such restrictions will not achieve first best outcomes. Furthermore, Calabrese (2011) calculates the mean ratio of permanently restricted assets to total assets to be 0.04 with a median of zero. As a consequence, any effect of restricted donations is likely to be small.

The limited set of corporate governance mechanisms enhances the importance of alternative mechanisms, such as legal constraints and media oversight (Fisman and Hubbard, 2003). U.S. nonprofits are primarily regulated by state law and Fisman and Hubbard (2005) finds that states with weaker oversight have greater governance problems (measured as a higher sensitivity of executive compensation to the inflow of private donations). Desai and Yetman (2005) finds that an increased likelihood of a misbehavior being detected or prosecuted increases the fraction of expenditures devoted to charitable activities and reduces the probability of undertaking inefficient fundrais-

ing activity. Media coverage has a significant influence over the level of charitable funding (Eisensee and Strömberg, 2007), but its role in the governance of nonprofit organizations has not been studied.

A number of studies have documented the fraud and other wrongdoings in nonprofit organizations (Gibelman and Gelman (2001, 2002, 2004); Fremont-Smith and Kosaras (2003) and Greenlee et al. (2006)). These papers identify and describe large public scandals of both U.S. and international nonprofits. Very often, the wrongdoings were carried out by the CEO or the CFO and typically went on for years without detection. Most papers argue that the ultimate problem is one of weak governance with the board of directors not properly fulfilling its fiduciary duties. However, none of these papers study the effects of such wrongdoings. Karpoff and Lott (1993), which studies the effects of fraud in corporations, finds that the initial press reports led to a decrease in the stock market value that significantly exceeded the expected costs to the organization of legal sanctions. The authors attribute this penalty to a loss in organizational reputation.

Contribution of Paper 2

The second paper in this thesis contributes to the literature by quantifying the agency costs in nonprofit organizations. In particular, the paper estimates how newspaper reports on embezzlement affect donations received by nonprofit organizations. Based on a unique data set on wrongdoings by top managers in nonprofits between 1995 and 2002, I estimate that annual donations decrease by 42.4% after a news report on embezzlement. I account for the possibility that news re-

ports may affect fundraising efforts by estimating the effect on the cost of raising donations. I find that a news report increases the cost of raising one dollar by 4.80 cents on average. These findings provide evidence that the cost of weak governance in nonprofit organizations is very high.

3.2 Motives for charitable donations

Existing literature

This paper also adds to the literature on what motivates donors to make charitable contributions, a question that scholars have debated for a long time. The explanations can be grouped into four underlying motives: warm glow, altruism, fringe benefits and image enhancement. Under the warm glow motive, individuals derive utility from the act of giving itself (Andreoni, 1989) and do not care about how their funds are used. Altruistic donors are concerned only with the output generated to beneficiaries (Vesterlund, 2006). Fringe benefits include invitations to gala dinners or concerts and image enhancement refers to the perceived increase in social status of the donor. (See Bekkers and Wiepking (2011) for a broad discussion on donor motivation.)

Contribution of Paper 2

My paper concerns the final motive: image enhancement. This is the only motive under which the embezzlement of a relatively small amount of money would cause a large effect on donations. Firstly, warm-glow donors do not care how their donations are used. Sec-

ondly, altruistic donors will not care either as long as the output of the social good is not materially affected, which is not the case if the amount stolen is small in relation to total output. Likewise, donors motivated by fringe benefits are only affected if the embezzlement materially reduces the amount of such benefits. Hence, none of these motives play a role in my setting. However, embezzlement may well damage the reputation of an organization, regardless of the sum involved, making it less attractive to image-seeking donors.

Glazer and Konrad (1996) develops a theoretical model in which individuals enjoy utility from signaling their wealth through making charitable donations. The model addresses the question of why organizations that receive funding from image-seeking donors provide any services at all. The answer is that the strength of the signaling effect increases with the reputation of the organization: donors are more willing to donate to an organization if there is a high likelihood that the intended audience will hear about the donation and agree to it. In this context, news of embezzlement will have a negative effect on the reputation of an organization and donations will decline as a result.

Harbaugh (1998); Buraschi and Cornelli (2014) are two empirical papers that study this motive using data from a single organization (a prestigious law school and the English National Opera, respectively). Both papers find support that a substantial portion of donations can be attributed to the image enhancement motive. My paper adds to this literature by studying the role of image enhancement across a larger sample of organizations as opposed to single organizations. It

is the first to introduce variation both across and within organizations in their attractiveness as signaling vehicles for donors seeking image enhancement. The large negative effects on donations from news of embezzlement imply that image enhancement is an important motive for donation and are consistent with previous literature.

4 Organizational Innovation

The final paper in the thesis is co-authored with professor David T. Robinson. It moves beyond traditional nonprofit organizations and takes a broader perspective on the organizational form used to deliver socially valuable output. As pointed out by Kenneth Arrow, “...the links between the commercial and nonprofits sectors are growing rapidly, and the lines that divide them are getting harder to define” (Arrow, 1998). In this section, I first outline the existing academic research from a firm perspective and then discuss the literature on the commercialization of the nonprofit sector.

4.1 Corporate social responsibility

Existing literature

Recent years have seen an increasing interest in adopting a wider definition of the scope of for-profit firms as well as a broader set of investor preferences. The debate around CSR, which embodies the corporate sector’s efforts to resolve problems that typically have been within the purview of government and traditional public charities, is not new. Levitt (1958) discusses the scope for businesses and takes the view that “...government’s job is not business, and busi-

ness's job is not government...". In his famous article, Friedman (1970), states that firms should maximize financial profits and shareholders, in turn, should allocate their respective proceeds to charitable purposes as they see fit. Nonetheless, the prevalence CSR is increasing rapidly. In 2011, 95% of the largest 250 companies in the world reported on their corporate responsibility activities, up from 80% in 2008.⁶ Many national governments and stock exchanges are promoting sustainability reporting by adopting laws and regulations that specifically mandate this form of disclosure (Ioannou and Serafeim, 2011). In addition, social responsible investing (SRI), a form of investing that considers both the investor's financial needs and an investments impact on society, has grown to a large industry and amounts to \$3.74 trillion in the U.S. alone.⁷

Corporate social responsibility can be motivated in three different ways: increased profits, agency issues (managers generating private benefits) and delegated philanthropy on behalf of shareholders (Bénabou and Tirole, 2010; Baron, 2008). The profit motive has been studied extensively by empiricists. Margolis et al. (2007) conducts a meta-analysis of 167 empirical papers on the effect of CSR on financial performance. The evidence indicates a weakly positive relationship between social performance and financial performance. The overall average effect across all studies is statistically significant, but small on an absolute basis. A recent paper, Hong et al. (2011), criticizes the lack of exogenous variation in previous studies and also raises the issue of reverse causality. The paper uses a natural experi-

⁶Global Reporting Initiative Annual Report 2011/12

⁷The Forum for Sustainable and Responsible Investment (US SIF), 2011

ment by exploiting the fact that the excessively high valuations of the Internet bubble of 1996-2000 spilled over into non-dot-com firms. The higher valuations temporarily relaxed the financial constraints of firms and led to increased CSR spending. The results show that “goodness” of a firm is costly and determined by a firm’s financial status.

The agency motive for CSR has been investigated by Cheng et al. (2013). Using two quasi-experiments, the authors find evidence supporting agency issues as a driver for CSR. First, they exploit the 2003 Dividend Tax Cut as a shock to managerial ownership and finds that this had a negative effect on CSR spending. Secondly, they use a regression-discontinuity strategy by exploiting close proxy contests regarding shareholder initiated governance proposals. They find that firms in which shareholder proposals narrowly pass experience much slower growth in CSR than firms in which the proposals narrowly fail. In his essay, Friedman (1970) criticizes this type of corporate behavior, which is not in the interest of shareholders. (See Besley and Ghatak (2007) for a theoretical model of the feasibility of agency-driven CSR in a competitive market.)

Under delegated philanthropy, the third motive for CSR activities, stakeholders demand that the firm engages in prosocial behavior on their behalf. It is the only motive that considers the social output of a firm. As argued by Bénabou and Tirole (2010), some investors, customers or employees of a firm are often willing to sacrifice money to further social goals. The authors list information costs and transaction costs as possible reasons for delegated philanthropy. Another

possible reason is that a firm that may have a comparative advantage in generating social output, such as technical expertise, making it more efficient than the stakeholder himself.

Given the size of the sector, it is surprising that the economics of delegated philanthropy are not better understood. The apparent lack of win-win projects, as illustrated by Margolis et al. (2007), begs the question: should firms engage in social projects with a negative trade-off? Several papers develop economic models to explain the existence of CSR within a purely for-profit economy, ignoring the social output from nonprofit organizations (see for example Fisman et al. (2006); Baron (2007); Baron et al. (2011); Barnea et al. (2009)). Two exceptions are Graff Zivin and III (2005) and Kotchen (2006). The former develops a capital market model in which firms compete with for-profit firms in the market for capital as well as with nonprofits in the market of supplying social goods. Investors gain utility both from personal consumption and from making donations to worthy causes. The result is that firm valuations depend on relative taxes and the investors' relative utility from corporate philanthropy versus direct philanthropy. What makes this model less general is that it is based on corporate philanthropy as opposed to social output arising out of a firm's operations. Kotchen (2006) develops a model that addresses some of the issues raised by Bénabou and Tirole (2010). His model assumes investors have preferences over two dimensions (social welfare and private consumption) and maximize utility by allocating wealth across three investment opportunities: a profit-maximizing, a nonprofit organization and a hybrid firm that

generates both financial and social returns to investors.⁸ The author develops conditions for how investors will allocate their capital and what the total social and financial returns will be in the economy. However, the model makes the strong assumption that the output mix of the hybrid firm is exogenously given. As a result, the model does not shed any light on the optimal return mix of the hybrid firm. Furthermore, it does not help us understand how a hybrid firm should be evaluated. Investors in hybrid firms today rely on untested rules-of-thumb, such as break-even conditions, social screening or social return on investment (SROI). In the absence of economic theory, we do not know if these investment policies are optimal.

Contribution of Paper 3

The third paper of this thesis aims to fill this gap by developing a model based on a continuum of different social/financial output combinations. This, in turn, leads to an endogenous output mix of social enterprises. In our model, firms generate financial and social returns to investors with a negative marginal rate of transformation. The negative trade-off between social and financial output is based on an assumption that all *win-win* opportunities, such as profit-enhancing “green” products, have been exploited. Differences in the technologies between the for-profit sector and the social sector give rise to comparative advantages and play a key part in the analysis. The model makes two main contributions to the literature on delegated philanthropy. Firstly, it allows us to analyze the conditions under

⁸The model is framed as a model of consumption choice, but can be translated into an investment choice setting.

which hybrid organizations emerge in place of traditional charities and profit-maximizers. Secondly, our framework yields an optimal investment policy for both financially-focused and socially-focused firms, which we call SoFT: the social/financial tradeoff. SoFT typically Pareto-dominates many common social investment principles, such as social or environmental screening, because it optimally incorporates foregone financial output when considering the cost of producing social output.

4.2 Commercialization of nonprofits

Existing literature

Next, I shift my attention from the profit-focused end of the spectrum to the socially-focused end. From this perspective, delegated philanthropy refers to social organizations that pursue commercial activities at the expense of social output. (A positive effect of commercial activities on social output corresponds to the profit motive and is excluded by assumption.) In contrast to the literature on CSR, very little has been written about the commercialization of nonprofits. The existing literature is primarily normative and there are no empirical papers testing the effect of commercial activities on social output. Gregory Dees notes that nonprofits are increasingly adopting business methods. “Faced with rising costs, more competition for fewer donations and grants, and increased rivalry from for-profit companies entering the social sector, nonprofits are turning to the for-profit world to leverage or replace their traditional sources of funding” (Dees, 1998). These activities range from supplemen-

tary revenue-generating activities to a commercialization of the core programs through which they accomplish their missions. Weisbrod (1998) argues that increased commercialization of nonprofits leads to reduced social output, since it may distract management attention or cause a deviation from the organization's mission. His concerns are related to agency issues and constitute a similar argument to that made by Friedman (1970): nonprofits should focus solely on generating social outputs and leave profit making activities to for-profit entities. On a similar note, Bradach and Foster (2005) argues that very few commercial ventures of nonprofits are profitable and that these activities may distract management attention away from their social missions.

The question therefore arises: is it ever optimal for social organizations to engage in commercial activities if investors can earn financial returns by investing directly in for-profit firms?

Contribution of Paper 3

Our model addresses this issue analogously to the issue of CSR. (Note that our model abstracts away from the non-distribution constraint that prevents nonprofit organizations to pay dividends to investors. See Wexler (2009) for a discussion on alternative legal forms for social organizations.) We show that the factor deciding whether an output combination is attractive to investors is the marginal rate of substitution between the two outputs. The model outlines the necessary conditions for the optimal level of commercial activities of a hybrid firm (SoFT). As in the case of optimal CSR policy, SoFT

Pareto-dominates the investment principles commonly used by practitioners for social enterprises, such as the financial break-even requirement and SROI. Another important insight from our model is that the technology used in the for-profit has a direct effect on the optimal level of commercial activities of social organizations (and vice versa).

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Paper 1

Intertemporal Preferences of Nonprofit Organizations*

ABSTRACT. This paper studies the intertemporal preferences that govern the spending decision of nonprofit organizations. I develop a dynamic model for nonprofit spending by extending the consumption Euler model to allow for heterogeneous parameters with regards to organizational characteristics. Using a large panel of U.S. nonprofits, I find that the subjective discount rate is decreasing in donation dependency and organizational size. The elasticity of intertemporal substitution is increasing in donation dependency and decreasing in size. My results are consistent with charitable donations giving rise to agency issues and adjustment costs increasing with size. The accuracy of my data allows me to use the exact, non-linear Euler model and to confirm that estimates generated by the traditional

*This paper has benefitted significantly from many helpful discussions with Per Strömberg and Roméo Tédongap.

log-linear approximation are biased.

1 Introduction

The purpose of a nonprofit organization is to fulfill its mission and not to generate a financial surplus (Childress et al., 2004). However, nonprofit organizations are not prohibited from generating a surplus, only from distributing any part of it (Hansmann, 1980). For example, an organization that prefers a smooth level of spending may choose to maintain a surplus if revenues are unexpectedly high in a particular year. Saving is also a method of shifting resources to the future. An organization that is focused on addressing urgent societal needs will behave differently compared to one that places a large emphasis on long-term projects and has more patience. In this paper, I study the intertemporal preferences that determine the spending policies of nonprofits and how these differ across various types of organizations.

My focus is on *operating* charitable organizations, which excludes grant-making organizations, such as foundations. In fact, most of the wealth in the nonprofit sector is not in the hands of private foundations, but is rather held by service-providing organizations (Fremont-Smith, 2002). In this paper, I define *nonprofit organizations* (or *nonprofits*) as U.S tax-exempt public charities under section of the Internal Revenue Code 501(c)3.

Nonprofit organizations provide important services to society. With the nonprofit sector accounting for 5.4% of GDP¹, the spend-

¹Urban Institute 2009

ing policy of nonprofits is of significant importance to the US economy. The surplus-to-total revenues ratio varies considerably over time and across organizations. During 1996 and 2000, the average ratio in my sample was 13.55%.² The remainder was spent on operations, such as program expenses and administration. In the subsequent five-year period, 2001-2005, the average ratio was -0.16%. What does this tell us about the way nonprofits are operated? One clue is given by the interest rate, which was significantly higher in the first period compared to the second, 2.99% versus 0.25% (real one-year treasury bond rate).

This question is important for policy makers, since it has a direct effect on the level of services provided by nonprofits to society. A higher interest rate makes saving more attractive and current spending more expensive relative to future spending. From a donor perspective, it is important to know not only *how* a particular type of organization spends its resources, but also *when*. Most donors prefer their contribution to support programs in the short term. In a survey conducted by the Better Business Bureau, 63% of donors expected their donation to be spent on current programs.³ On the other hand, there are also donors who take the opposite view and do not want their donation spent on current projects. For example, it is not uncommon that large donations to universities are restricted by making them conditional upon the principal amount never being used and that only the investment income it generates can be spent.

²Total revenues include financial income.

³BBB Wise Giving Alliance Donor Expectations Survey, September 2001, Princeton Research Associates

In addition, there are donors who are motivated only by *warm-glow*, whereby their utility is derived from the act of giving itself (Andreoni, 1990). These donors do not care at all when their donation is spent, leaving management with a higher degree of discretion. So far, very little is known about the intertemporal preferences of nonprofits.

My starting point is the standard Euler model developed by Hall (1978), which has been the workhorse model during the last 35 years for studying the consumption and savings decisions of households. The spending decision of a nonprofit organization bears great resemblance to the consumption problem of a household. The intertemporal budget constraint of a nonprofit is found by taking that of a household and substituting consumption for spending and labor income for operational revenues. The other components of the budget constraint, initial wealth and the interest rate, remain the same. Analogously to the case of private consumption, it is assumed that managers derive utility from total spending.⁴

An alternative way to model the saving decision of a nonprofit organization would be to apply models developed for for-profit firms. There is a large related literature ranging from the neoclassical investment model (Hall and Jorgenson, 1967) and the accelerator model (Lucas, 1967) to the marginal q model (Abel, 1981; Hayashi, 1982). Particular attention has been devoted to studying if the cost of ex-

⁴This implicitly assumes that managers earn the same utility from administrative expenses as from spending on projects and that different types of projects are valued equally. See James (1983) for a model where nonprofit managers have preferences over the product mix.

ternal financing in imperfect capital markets affects the investments of firms (see for example Fazzari et al. (1988); Whited (1992); Kaplan and Zingales (1997); Rauh (2006); Riddick and Whited (2009)). I choose the consumption model over existing models of the firm because there are some fundamental differences between firms and nonprofits that render these models unsuitable. Firstly, firms and nonprofit organizations have different goals. Firms seek to maximize profits whereas the goal of a nonprofit is the opposite: to maximize spending. Secondly, nonprofits do not have equity and only limited access to debt. The cost of internal versus external financing is therefore not a first-order issue.

Furthermore, existing models of the firm typically make explicit assumptions about intertemporal preferences, which is precisely what I aim to study. For example, Riddick and Whited (2009) develops a dynamic model in which firms choose their investment level subject to adjustment costs and the cost of raising external financing. The model assumes that all firms are risk-neutral and that the discount rate applied to future utility equals to the cost of funding. The attitude of agents towards uncertainty is a core feature of the consumption model in which intertemporal preferences are endogenously determined. This allows for different motives among organizations to be reflected in the preference parameters. Another benefit of the model is that it circumvents the need for a closed-form solution to the intertemporal maximization problem by deriving testable implications from an equilibrium condition based on the first-order condition. In particular, it makes it possible to generate estimates

of intertemporal preferences without an explicit utility function using actual observed consumption data. Finally, it does not include income as an explanatory variable which solves the issue of endogeneity arising from revenues and spending being interdependent. Browning and Lusardi (1996) and Attanasio and Weber (2010) are two excellent overviews of the application of the Euler model to private consumption.

The benefits of the Euler model come at a cost. One drawback of the model is that it is silent about the level of spending and the level of wealth. Instead, the key variable is spending growth (the change in spending between the current period and the next). A second drawback of the consumption model is that it requires an assumption about how savings are used. In particular, the model assumes that nonprofit saving is motivated by a desire to smooth spending and not by an intention to increase operating revenues in future periods. It is also assumed that donations and other revenues are stochastic. If savings were to constitute investments in income-generating activities, operating revenues would be endogenous, which would pose a threat to my identifying assumption. A corresponding example in the private consumption setting is an individual that invests a part of her saving in income-enhancing activities, such as further education.

Household finance papers are based on survey data and use a log-linearized approximation of the Euler equation for estimation to overcome problems related to measurement error in the consumption

variable.⁵ The log-linear approximation has been criticized for some severe shortcomings, the most important being the omission of the second and higher moments of expected consumption growth (Carroll, 2001). In contrast, the data I use comes from financial accounts filed with the Internal Revenue Service. This is a significant advantage, which allows me to use the exact, non-linear Euler equation to estimate my parameters. Estimates are generated using the general method of moments (GMM) that was developed by Hansen (1982) and which is particularly well-suited for estimating the Euler equation. A second advantage is that I have panel data. Most papers on private consumption estimate Euler equations using aggregate time series data or cross-sectional micro data (Attanasio and Weber, 2010).

I apply the Euler model to a panel of 19,100 U.S. nonprofits and generate estimates for both the subjective discount rate and the elasticity of intertemporal substitution (EIS). Assuming constant relative risk aversion (CRRA), I find that the subjective discount rate, which measures the patience with which nonprofits spend their resources, is negative and significant (-0.0054 in the main specification). This presents a puzzle, since it implies that future spending is deemed more important than spending today. Given that the model assumes an infinite horizon, a negative discount rate will lead to future utility increasing infinitely as the denominator decreases for every period. Thus, a negative discount rate contradicts the assumptions of the standard model. One possible explanation to this finding is that

⁵Runkle (1991) estimates that measurement error accounts for approximately 76% of the variation in consumption growth in the Panel Study of Income Dynamics (PSID) data set.

organizations have finite horizons.

Organizations that depend heavily on donations have a lower discount rate. This is consistent with an agency motive, where managers focus on the future and accumulate wealth and donors are either unable to influence management's spending policy or simply do not care. Large organizations have a lower discount rate, suggesting that they have more long-term commitments than smaller organizations. Alternatively, large organizations may place a higher value on long-term survival than smaller organizations, who need to focus on the shorter term.

EIS measures the responsiveness of spending growth to changes in the real interest rate. My estimates show that for the average organization, a one percent increase in the real interest rate leads to a 1.1993% increase in the spending growth (the ratio of tomorrow's expected spending over today's spending). This is substantially higher than the estimate for the consumption of private individuals, which is 0.3-0.8 (Attanasio and Weber, 2010). In other words, nonprofits respond more strongly to changes in the interest rate and are less concerned about maintaining a smooth level of spending. A policy-relevant consequence is that an increase in the interest rate will reduce the services provided by nonprofits in two ways: a reduction in spending growth (an increase in saving by nonprofits) and a reduction in the growth of charitable donations from the public. My results show that the former effect will exceed the latter.⁶

⁶This assumes that the EIS estimates based on consumption data also applies to donations. See Steinberg (1990) for a discussion why donations are often considered to be a normal consumption good.

EIS estimates are significantly larger for organizations that have a high dependency on donations. A one percentage point increase in donation dependency leads to a 0.005291 increase in EIS. The estimate is statistically significant at the 1% level. This finding is consistent with a higher degree of discretion in the spending of donation dependent organizations compared to organizations that primarily earn commercial revenues through charging its customers fees for its services. To illustrate this finding, consider a career service for immigrants that fund operations either by charging fees for its services (commercial organization) or by raising donations from the public (donative organization). If clients have to pay for the services, they will demand delivery in connection with their purchase and will observe if these services are delivered or not. This makes it difficult for the organization to divert funds towards saving. If, on the other hand, services are funded by public donations and the clients receive the services for free, it is easier for the organization to cut the hours of counseling or the number of seminars held in a given year and to instead increase saving.

Large organizations have a lower EIS compared to smaller organizations. A one percentage increase in (ex ante) revenues leads to a decrease in EIS by 0.0922 (significant at the 10% level). This is consistent with large organizations being less able to adapt spending in the short term to new opportunities, such as changing interest rates. Large nonprofit organizations are complex institutions that pursue multiple, non-financial goals that are inherently difficult to measure and have weak monitoring given the lack of residual claimants. This

makes them in many ways similar to public organizations and according to Frederickson et al. (1976), there is a consensus that there is a greater rigidity in public organizations compared to private organizations, making them more cautious and less flexible. Consider for example, the National Association for the Advancement of Colored People (NAACP). Formed in 1909 in New York City, it was the oldest, largest and strongest civil rights organization in the US in the mid-1990s with revenues of approximately \$10 million. It was a very bureaucratic and rigid organization with 64 board members and 23 board committees. All policy issues had to be voted on by the annual convention (one convention considered a total of 46 resolutions). The NAACP had a leadership crisis in 1995 and it took the new Chair of the board three months to determine that the organization was \$3.5 million in debt. According to board members, reducing the costs to address the indebtedness was extremely difficult (Austin, 1997).

There are other versions of the Euler model available than the standard model. For example, Epstein and Zin (1989) generalizes the CRRA utility function and allows for a separation between risk aversion and intertemporal substitution. This model requires data on the return on the optimal portfolio for each observation. In an asset pricing setting, it is typically assumed that the stock market index is a good proxy for optimal portfolio of all investors. However, non-profit organizations are likely to have different optimal portfolios, given various levels of market participation. In an attempt to adopt this model, I created organization-specific optimal portfolio returns

based on actual total investment income and actual total financial assets for each organization-year observation. However, the inaccuracies and the high level of noise in optimal return variable made it impossible to obtain estimates. The regressions failed to converge for a large part of the sample.

Another relevant extension of the standard model is Constantinides and Duffie (1996). This model introduces heterogeneity among agents whilst using aggregate data to estimate asset prices. The authors extend the Euler equation to depend not only on the average per capita consumption growth, but also on the cross-sectional variance of the individual consumers' consumption growth. In contrast to their setting, my sample consists of panel data which allows me to include heterogeneity in spending growth directly. I do this by extending the standard model to include organizational characteristics that allow for heterogenous intertemporal preferences across organizations.

My model data gives me a unique opportunity to compare the results from the non-linear Euler model to those obtained by the traditional log-linear approximation. There are several studies that compare the two models using simulated data (see for example Carroll (2001) and Attanasio and Low (2004)). However, there is no paper that compares the two models using real data. I find that estimates based on the classic log-linear approximation are indeed biased. The discount rate is significantly lower, which is in line with expectations when the the second moment of expected spending growth is omitted. Interestingly, the EIS estimate is almost identical between the

models when no organizational characteristics are included. However, the EIS estimate from the log-linear approximation is significantly lower when these variables are included in the estimation.

The rest of the paper is organized as follows. Section 2 gives an overview of the existing literature on nonprofit saving. In section 3, I describe the Euler model and the extensions I make to it. Section 4 describes the data. The results are presented in section 5. In section 6, I compare the non-linear model to the traditional log-linear approximation and I also discuss alternative interpretations of my results. Section 7 concludes.

2 Nonprofit Saving

Early papers on nonprofit finance discuss whether accumulation of wealth is optimal. Recent years have seen a rise in empirical papers on the determinants of wealth. However, this paper is the first to study the preferences underlying the spending/saving decision in a dynamic setting using a structural model.

Hansmann (1992) lists several reasons why it may be optimal for nonprofits to accumulate wealth.⁷ First, lumpy donations and economies of scale in fundraising campaigns may justify the creation of a temporary financial buffer to smooth out expenditures. Second, the effects of unexpected financial shocks to either revenues or expenses can be alleviated through accumulation of a financial buffer. Keating et al. (2005) finds that financial vulnerability is indeed a ma-

⁷The paper is focused on university endowments, but many of the arguments can be generalized to other types of organizations.

major problem for nonprofits and that in 2000, 7% of U.S. nonprofits organizations were insolvent (liabilities exceeded assets). Third, nonprofits may want to maintain independence from outside demands to be able carry out unpopular projects without risking a short-term reduction in revenues. Finally, wealth may be viewed positively by donors and thereby facilitate fundraising.

Despite the obvious advantages of saving, many scholars argue against it in favor of a focus on short-term spending. An often cited argument is that "...nonprofits operate to serve pressing needs today and that accumulating cash shortchanges today's needs for unknown future needs" (Young, 2007). Fremont-Smith (2002) argues that the tax payers, who subsidize these organizations through tax benefits, "have an immediate right to a real return". Hansmann (1992) lists three additional arguments against saving. First, it may unfairly penalize current generations if the overall economic growth will continue and, as a result, make future generations wealthier than today's. Second, future demand may decline due to demographic shifts, competition or the emergence of new technologies. Finally, he points to agency issues arising out of different interests between managers and donors. He concludes that wealth accumulation "may be at least in part a consequence of self-interested or short-sighted action by [the managers]". This final issue has caught significant attention and in this paper, I model intertemporal preferences in a way that allows me to study the presence of agency-related behavior.

Empirical papers on nonprofit wealth focus on agency issues as a driver of financial asset accumulation. Fisman and Hubbard (2005)

finds that a weaker state-level governance leads to higher levels of wealth and interpret this as an indication of agency issues. Their argument is based on the assumption that it is easier for managers to “steal” from financial assets as opposed to stealing from revenues.⁸ Core et al. (2006) studies three possible motives for accumulation of “excess” wealth. The authors define excess wealth as the difference between actual wealth and a predicted value based on a regression of wealth on various organizational characteristics. They reject that excess wealth is built up in anticipation of growth opportunities. They also reject that wealth is higher due to superior firm-specific monitoring that would make donors less concerned about agency issues. Instead, the authors find a strong correlation between management compensation and excess wealth and interpret this as an indication that the agency motive is a main driver of wealth accumulation.

Andreoni (1989, 1990) has shown that *warm-glow giving* can be a dominant motive for charitable donations. Donations made under this motive do not place any conditions on how or when the funds are used. As a result, this motive strengthens the agency issue by allowing managers to extract private benefits without any influence of donors. The preferences I estimate for nonprofits in this paper are consistent with nonprofit saving being driven by agency-related motives on the part of nonprofit managers.

⁸There may also be other types private benefits that managers can extract from accumulated wealth. Tuckman and Chang (1992) suggests that saving may be considered by some managers as a measure of success or even be an end in its own right.

3 Model

My estimations are based on a theoretical model that extends the standard Euler model used for estimating the intertemporal preferences of households. There is one obvious difference between household consumption and nonprofit spending: organizations do not face certain death.⁹ There are, however, many similarities. Both have budget constraints consisting of recurring income and have spending as their choice variable. Agents maximize expected utility, which can be assumed to be a function of spending. An important assumption in the Euler model is that all information at time t is taken into account when making the spending decision. This is widely assumed to hold for individuals, despite the significant information processing required. For nonprofits, which are professionally operated, this assumption should be even more likely to hold.

3.1 Standard model

In my model, organizations are infinitely lived and endowed with some initial level of wealth. They derive utility from total spending and utility is assumed to be additive over time. Any amount not spent is saved and yields a risk-free return.¹⁰ The only agents in the model are nonprofit organizations. The model is a partial equilibrium in the sense that the risk-free rate is taken as exogenous.

Organization i maximizes expected utility over time based on a

⁹I do not have information on the age of organizations and I am therefore unable to test if age affects organizational preferences.

¹⁰The Euler model holds for each individual financial instruments held by an agent. This paper only considers the risk-free return.

subjective discount rate that is constant over time, but varies across organizations. Total expected utility of organization i at time t can be expressed as

$$V_{it} = E_t \left[\sum_{s=0}^{\infty} \frac{1}{(1 + \rho_i)^s} u_i(C_{it+s}) \right] \quad (1.1)$$

where E_t is the conditional expectation operator at time t and C_{it} is the real spending by organization i in the period beginning at time t and ending at time $t + 1$ (the “current period”). This problem is subject to the intertemporal budget constraint which holds for all t and all i

$$A_{it+1} = A_{it} R_{it,t+1} + Y_{it} - C_{it} \quad (1.2)$$

where A_{it} and A_{it+1} are the level of assets at times t and $t + 1$, respectively, $R_{it,t+1}$ is the gross real risk-free interest rate between time t and $t + 1$ (known at time t) and Y_{it} is the (stochastic) operating revenue received between time t and $t + 1$. This problem is solved recursively and the first-order condition is given by the well-known Euler equation (Hall, 1978)

$$E_t \left[\frac{1}{1 + \rho_i} \frac{u'_i(C_{it+1})}{u'_i(C_{it})} R_{it,t+1} - 1 \right] = 0 \quad (1.3)$$

I assume that nonprofits have an isoelastic utility function of the form

$$u_i(C_{it}) = \frac{C_t^{1 - \frac{1}{\phi_i}} - 1}{1 - \frac{1}{\phi_i}} \quad (1.4)$$

where ϕ_i denotes the elasticity of intertemporal substitution of organization i .¹¹ A necessary and sufficient condition for optimal spending growth is given by

$$E_t \left[\frac{1}{1 + \rho_i} \left(\frac{C_{it+1}}{C_{it}} \right)^{-\frac{1}{\phi_i}} R_{it,t+1} - 1 \right] = 0 \quad (1.5)$$

This condition states that agents want to keep marginal utility constant over time. A consequence of this condition is that the degree of intertemporal substitutability of spending is independent of the level of spending, even at very low levels of spending. The assumption of rational expectations on the part of the organization means that the conditional expectation operator in equation 1.5 coincides with the mathematical expectation of the expression within the brackets and implies that deviations from the actual value of that expression and the left-hand side of equation 1.5 are, on average, zero and orthogonal to all information available to the organization at time t (Attanasio and Low, 2004). The orthogonality condition requires that current spending does not affect future expected spending. My estimations are therefore based on the assumption that savings are used as a financial buffer as opposed to investments in revenue-generating activities.

The model contains two structural parameters: the subjective discount rate, ρ_i , and the elasticity of intertemporal substitution, ϕ_i . The interpretations of ρ_i and ϕ_i are identical to the case of house-

¹¹ $\frac{1}{\phi_i}$ can also be interpreted as the relative risk aversion. See section 6.3 for a discussion on this issue.

hold consumption. The subjective discount rate measures how much organization i values utility in the next period compared to the current period and is an indication of the patience with which it spends its resources over time. A high discount rate corresponds to low patience and implies a strong preference for current spending relative to future spending.

The elasticity of intertemporal substitution is defined as the change in the ratio of next period's spending to this period's spending with respect to a change in the interest rate (the relative cost of spending between the periods), $\phi_i = \frac{d(\frac{C_{it+1}}{C_{it}})}{dR_{it,t+1}}$. In our case of stochastic operating revenues and a risk-free rate known at time t , the EIS can be expressed based on the expected logarithm of spending growth conditional on the information known by the organization at time t , $\phi_i = \frac{dE_t[\ln(\frac{C_{it+1}}{C_{it}})]}{d \ln R_{it,t+1}}$ (Hansen and Singleton, 1983). In other words, ϕ_i measures how much (in percent) the spending growth of organization i changes in response to a one percent change in the interest rate.

The *exact* log-linearization of the standard Euler (equation 1.5) is given by the following expression (Carroll, 2001):

$$\Delta c_{it+1} = \alpha_{it+1} + \phi_i r_{it,t+1} + k_{it+1} + u_{it+1} \quad (1.6)$$

where $\alpha_{it+1} = -\phi_i \ln(1 + \rho_i)$, $\Delta c_{it+1} = \ln \frac{C_{it+1}}{C_{it}}$, and $r_{it,t+1} = \ln R_{it,t+1}$. The term k_{it+1} includes the second and higher moments of expected spending growth. In the particular case where $\frac{C_{it+1}}{C_{it}}$ is log-normally distributed, we have $k_{it+1} = \frac{1}{2} \phi_i \sigma_{\Delta c_{it+1}}^2$ (Hansen and

Singleton, 1983). u_{it+1} is the error term.

3.2 Parameterization of the standard model

Next, I extend the standard Euler model by assuming that ρ_i and ϕ_i can be written as linear functions of organizational characteristics. A similar approach is adopted by Lawrence (1991), in which the subjective discount rate of individuals is parameterized using socio-economic characteristics. In this paper, I focus on the two main characteristics of nonprofit organizations: donation dependency and size. I define donation dependency of organization i , X_i^d , as the ratio of donations to operating revenues and use the value from the first year in the sample to ensure that this measure is exogenous and uncorrelated to the error term. An organization's size, X_i^s , is defined as the logarithm of operating revenues in the first year of the sample (logarithm is used to reduce the effect of outliers). The goal is to study if and how these two characteristics affect the intertemporal preferences of nonprofits.

I define the vector of organizational characteristics by $\mathbf{X}_i = \begin{bmatrix} X_i^d \\ X_i^s \end{bmatrix}$

and a vector of parameters $\delta = \begin{bmatrix} \delta_d \\ \delta_s \end{bmatrix}$ such that $\mathbf{X}_i' \delta = \delta_d X_i^d + \delta_s X_i^s$. I can now parameterize the subjective discount rate of organization i as

$$\rho_i = \bar{\rho} + \mathbf{X}_i' \delta \tag{1.7}$$

where $\bar{\rho}$ captures a systemic component common to all organizations. δ_d and δ_s capture the respective effects of donation depen-

dency and size on ρ_i .

Next, I relax the assumption made in Lawrence (1991) that the EIS is constant across agents and instead assume that this parameter can also be written as a linear function of donation dependency and size. Similar to above, let $\mathbf{X}_i'\pi = \pi_d X_i^d + \pi_s X_i^s$ and

$$\phi_i = \bar{\phi} + \mathbf{X}_i'\pi \quad (1.8)$$

Equations 1.7 and 1.8 illustrate that each organizational characteristic may have two effects on preferences, a subjective discount rate effect and an EIS effect.

The extended Euler model equation becomes

$$E_t \left[\frac{1}{1 + \bar{\rho} + \mathbf{X}_i'\delta} \left(\frac{C_{it+1}}{C_{it}} \right)^{-(\bar{\phi} + \mathbf{X}_i'\pi)^{-1}} R_{it,t+1} - 1 \right] = 0 \quad (1.9)$$

Donation dependency

Donation dependency captures a central aspect of the nonprofit sector. Hansmann (1980) distinguishes between donative and commercial nonprofits. A nonprofit is considered *donative* if it is funded primarily by donations from the public and *commercial* if the bulk of income is received in the form of fees charged for services.¹² An example of a *donative* nonprofit is Partners in Health, an organization based in Boston, MA, that brings modern medical science to poor people in developing countries and is funded entirely by donations.

¹²A second type of commercial revenues is *unrelated business income*. This type accounts for a very small share of commercial revenues in my sample

A typical example of a *commercial* nonprofit is Mount Auburn Hospital, also located in Boston, MA, which generates more than 90% of its operating revenues in the form of patient fees. In practice, most nonprofits earn a combination of donations and commercial revenues which positions them somewhere in between a pure donative and a pure commercial organization. Interestingly, commercial revenues have increased tremendously in importance in recent decades. As a result, donation dependency has declined and accounts for an average share of only 0.292 in my sample. This trend has been particularly pronounced in sectors that have traditionally not been dependent on income from fees (Salamon, 2002). The reasons behind this rapid growth are a desire to increase revenues to spend towards its mission as well as managers seeking “power and autonomy” (Young, 2007).

Why might donative and commercial nonprofits differ in their patience or respond differently to changes in the interest rate? The major difference between these two types is that the services of a donative organization are paid for by donors, but delivered to third party beneficiaries (Hansmann, 1980). Donors are in a poor position to observe the quantity and quality. In contrast, customers of a commercial organization are both funders and recipients of the services. The result is that a donative organization can decide more freely on the quantity of services delivered in a given period. This higher level of discretion allows donative organizations to be more responsive than commercial organizations to new opportunities, in-

cluding changes in the interest rate.¹³ The result of this is a *positive* effect of donation dependency on the EIS.

Another possible mechanism is donor control. Donors lack the formal influence that shareholders have over for-profit firms, since nonprofit organizations have no residual claimants (Fama and Jensen, 1983) and the board of directors is often self-perpetuating (Hansmann, 1980).¹⁴ Nonetheless, donors can still exert both direct or indirect control. They can *directly* influence the spending policies of nonprofits by placing restrictions on their contributions as to when they are to be spent. Time restricted donations will have a negative effect on the discount rate (more patience). I do not have data on the share of donations that are restricted, but the overall amount of restricted reserves held by nonprofits is very low compared to total assets. Calabrese (2011) calculates the mean ratio of permanently restricted assets to total assets to be 0.04 with a median of zero. As a consequence, the effect of restricted donations is likely to be negligible.

Donors can exert *indirect* control by “voting with their feet” and support only those organizations that have spending policies that meet their approval. There is little research on whether donors actually make use of this possibility. Calabrese (2011) claims to find a negative effect of “excess wealth” on donations based on a cross-sectional OLS regression. However, these results are most likely negatively bi-

¹³Customers paying for services are likely to demand delivery in the short term, implying a negative effect of commercial revenues on management discretion.

¹⁴Membership organizations are an exception to this, but even here, donors have little influence and very rarely have voting rights (Hansmann, 1980).

ased, since the regressions do not take into account the interest rate. If the interest rate has a negative effect on donations and a positive effect on wealth, there will be a negative omitted-variable bias.

Suppose that donors have some indirect control over spending. This may have an effect on the *level* of spending (for example if donors punish organizations with excess wealth), but recall that the Euler model is silent on the level of spending and only captures changes to spending *growth*. It is unlikely that indirect donor control would affect EIS, since this would require donors to have preferences over how nonprofits should respond to changes in the interest rate. It is more likely that donors have preferences with regards to the subjective discount rate. As noted above, many donors seem to have a preference for short-term spending. Assuming some degree of indirect donor control, this preference would have a positive effect on the discount rate.¹⁵

If, on the other hand, donors are motivated solely by *warm-glow giving*, they do not care about the spending policy at all. In this case, managers are left with significant discretion and are likely to save excessively for the future (see Fisman and Hubbard (2005); Core et al. (2006)), leading to a negative effect of donation dependency on the discount rate. The relative strength of these two effects (donor urgency and warm-glow giving) will determine the overall effect of donation dependency on the subjective discount rate.

¹⁵This also requires that the urgency induced by donors exceeds that of the paying customers of commercial organizations. It is not clear how and to which extent paying customers influence the timing of nonprofit spending.

Size

Size may affect the EIS through differences in adjustment costs. The complexity and bureaucracy of large nonprofit organizations make their cost structures rigid. Higher adjustment costs in large organizations will also make them less able to adapt to changes in the interest rate which will lead to a *negative* effect of size on EIS.¹⁶

Size is also likely to effect the discount rate. Firstly, large organizations may place a higher value on survival of the organization than small organizations. This is, for example, the case if large organizations have more to lose from a decline of the organization (or bankruptcy) as suggested by Hansmann (1992). Secondly, large organizations may have longer term commitments than small organizations. For example, if large organizations have a greater share of projects that run over several years, there will be a higher focus on future spending. Both of these mechanisms will result in a *negative* effect on the discount rate (higher patience).

Note that the orthogonality conditions of the Euler model will be violated if smaller organizations face liquidity constraints. Zeldes (1989) argues that binding liquidity constraints may prevent poor agents from borrowing in certain years. In my sample, size is unlikely to be correlated with borrowing constraints, since I have filtered out all organizations where revenues are less than \$100,000 and

¹⁶High revenues do not imply that an organization is “rich” per se. The level of revenues of one organization can not be directly compared to another, since they may differ in the number of employees or capital employed. The income of individuals, on the other hand, can be directly compared and a higher level of income can be seen as a proxy for wealth.

total assets are less than \$250,000 in a year (due to the option to file a different financial form).

4 Data

The term *nonprofit* does not refer to a legal entity, but rather to a group of different organizational forms. The organizations studied in this paper are tax-exempt public charities under 501(c)3 under the Internal Revenue Code. These organizations must not operate for the benefit of private interests, may not engage in political and legislative activities (lobbying) and are prevented from distributing profits to any individual or controlling party. This definition also excludes private foundations (“non-operating foundations”), such as family foundations. The organizations in my sample are what most people typically refer to as nonprofits or charitable organizations. Within this definition, a wide variety of sectors are represented, such as environment, disaster relief, crime, culture, education and health. Nonprofits have four main sources of revenues: donations, government grants, commercial revenues and financial revenues. Not all nonprofits depend on donations as a source of funding. In fact, the most important revenue source in my sample is commercial revenues, which account for 58.9% of operating revenues.

I use financial data from the National Center for Charitable Statistics (NCCS) including organizations with financial years ending between December 1992 to November 2008. The data is taken from the IRS Statistics of Income Sample (SOI) files, a random sample of all organizations that file the Form 990. The IRS classifies all returns

filed in a year into strata based on the size of total assets at year-end, with each stratum sampled at a different rate. 100% of returns filed with total assets of \$50 million or more are included in the sample. The remaining returns are randomly selected for the sample at various rates, ranging from about 1 percent to less than 100 percent, depending on the level of assets.¹⁷ Since the sample is biased towards larger organizations due to the selection process, my estimates may be driven by the spending behavior of larger organizations.

I make a number of refinements to the data to increase the accuracy of my estimations. To avoid selection issues, I drop all observations for which filing was voluntary. If an organization's revenues are normally less than \$25,000, it may choose to file a different form than the Form 990 (Form 990-EZ).¹⁸ The same applies if revenues are less than \$100,000 and total assets are less than \$250,000 in a year. 2,555 organization-year observations are dropped due to voluntary filing. I exclude observations where a major item in the balance sheet or the profit and loss statement is reported to have the "incorrect" sign (17,535). I drop observations where the accounting period is not equal to 12 months (1,528). Organizations that are never included in at least three consecutive years will not be part of the time-series regressions and are therefore dropped (25,380). If an organization files multiple times for the same year, I use only the latest filing available (718 observations dropped). To avoid estimates being driven by outliers, I drop observations where annual spending

¹⁷The SOI sample accounts for 6.3% of the population during the sample period.

¹⁸I consider revenues to be *normally* less than \$25,000 if the average during the sample period is below this level.

growth ($\frac{C_{it+1}}{C_{it}}$) exceeds 5.0 (1,169) or is less than 0.2 (661).

The final sample consists of 169,958 organization-year observations based on 19,100 unique organizations. There are an average of 9,998 organizations included per year and the average sample period length is 8.90. Table 1.1 reports summary statistics for the final sample. All variables are adjusted for inflation to reflect 2007 prices using consumer price data from U.S. Bureau of Labor Statistics.

Table 1.1: Summary Statistics

	Mean	Median	Std. Dev.	Min.	Max.
Operating revenues (\$ mn)	58.076	9.695	262.690	0.000	29,298.387
Financial revenues (\$ mn)	6.319	0.655	76.287	-125.446	10,192.185
Total revenues (\$ mn)	64.395	11.697	295.803	0.000	29,683.157
Spending (\$ mn)	58.854	9.884	279.787	0.000	29,177.207
Donations / Oper. revenues	0.292	0.085	0.370	0.000	1.000
Operating revenue growth	0.023	0.029	0.514	-11.974	11.575
Spending growth	0.046	0.034	0.240	-1.606	1.609
Sample period length (years)	8.90	8.00	4.46	3.00	16.00
Organizations per year	9,998	11,254	2,582	2,431	12,231
Observations	169,958				
Unique organizations	19,100				

All values expressed in 2007 dollars.

Operating revenue is defined as the sum of donations, government grants, program service revenues, dues and gross event revenues. Average operating revenues amount to \$58,075,710 in my sample. Financial revenues are an important source of income with the average organization earning \$6,318,943 on its financial assets. Spending includes all expenditures made during the year. The main

items are program services, which includes all activities the organization was created to conduct, management and general administration costs. Average total spending was \$58,853,726, implying that nonprofits on average saved 8.6% of total revenues. Donations include all voluntary contributions from the public: payments, contributions, gifts, grants, and bequests that the organization receives directly from the public as well as the part of any payments, for which the payer (donor) does not receive full retail value from the organization.¹⁹ It includes both cash and non-cash contributions (donated goods sold by the organization to realize their monetary value). Donation dependency ranges from zero to one with an average of 0.292 and a median level of 0.085.

There is a difference between the (equally-weighted) growth level of operating revenues (2.3%) and spending growth (4.6%). Also, the dispersion is lower for spending growth than for revenue growth.²⁰ This matches the data on individuals, where the volatility of labor income growth exceeds that of consumption growth. In both cases, it indicates that agents tend to smoothen their spending over time.

The economic variables are positively skewed with the median values being significantly below the mean values. In my sample, there are a total of 4,287 organizations that had total revenues of \$50 million or more in at least one year. The main reason for this skewness is that it is very difficult for a nonprofit organization to become

¹⁹For example, items may be auctioned off for a price above the market value. The excess price paid is a donation whereas the market price is booked as commercial revenue.

²⁰This relationship holds even if I filter out observations with extreme revenue growth.

very large. According to Foster and Fine (2007), more than 200,000 nonprofits were started in the U.S. between 1970 and 2007, but only 144 of these have reached \$50 million in annual revenue.

I use monthly observations of the yield on one-year treasury bonds from the Center for Research on Security Prices (CRSP) as the risk-free rate. I adjust this rate for inflation to generate the real interest rate for my estimations. The rate used differs across organizations, since financial year-ends vary (December and June are the most common).

5 Results

I follow standard procedure and use an instrumental variables estimation. My estimates are generated using the generalized method of moments (GMM), since this method is more efficient than two stage least squares (2SLS) in the presence of heteroskedasticity and serially correlated error terms (Hansen, 1982). The results are shown in table 1.2.

The first column estimates equation 1.5 and does not take into account organizational characteristics. The estimate for the discount rate is 0.0264, but is not significantly different from zero. The EIS estimate of 0.6534 is highly significant and indicates that, on average, nonprofit organizations increase their (expected) spending growth by 0.6534% in response to a 1% increase in interest rates.

All instrumental variable estimation methods, including GMM, rely on the assumption that the instruments are distributed independently of the error term. This can be tested if there are more

Table 1.2: Intertemporal preferences and their determinants
(Non-linear GMM estimation)

	(1)	(2)
$\bar{\rho}$		0.0780*** (0.0130)
δ_d		-0.0056*** (0.0017)
δ_s		-0.0051*** (0.0008)
$\rho = \bar{\rho} + \delta_d X^d + \delta_s X^s$	0.0264 (0.0164)	-0.0054*** (0.0008)
$\bar{\phi}$		2.5283*** (0.7792)
π_d		0.5291*** (0.1954)
π_s		-0.0922* (0.0474)
$\phi = \bar{\phi} + \pi_d X^d + \pi_s X^s$	0.6534*** (0.1031)	1.1993*** (0.0780)
Observations	123,978	119,901
Hansen's J	2.431	155.043
Hansen's J (p value)	(0.119)	(0.000)
Degrees of freedom	1	4
Wald test (p value): $\delta_d, \delta_s, \pi_d, \pi_s = 0$		0.000
Wald test (p value): $\delta_d, \pi_d = 0$		0.000
Wald test (p value): $\delta_s, \pi_s = 0$		0.000

All standard errors are clustered at level of organization.

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

instruments than endogenous regressors. The Hansen J-test veri-

fies the assumption that all instruments are uncorrelated with the error term and is done by regressing the residuals from the GMM estimation on all instruments.²¹ Under the null hypothesis that all instruments are uncorrelated with the error term, this test has a large-sample $\chi^2(r)$ distribution where r is the number of overidentifying restrictions. In column (1) I have two endogenous regressors (spending growth and the interest rate) and three instruments (lagged interest rate, lagged spending and a vector of ones) and the Hansen J statistic has a p value of 0.119, which means that the null hypothesis can not be not rejected.

In column 2, I introduce organizational characteristics and estimate equation 1.9. Including these characteristics can be very important. Attanasio and Weber (1995); Attanasio and Low (2004) show that EIS estimates are biased if heterogeneity is not controlled for. Including these variables is informative in two ways. The first is that changes to the overall estimates (differences in ρ and ϕ between columns 1 and 2) tell us if the estimates in the first specification (column 1) are biased due to omitting endogenous variables. The second effect is that it allows me to quantify the effects of each characteristic on the two preference parameters (π_d , π_s , δ_d and δ_s).

5.1 Subjective discount rate

The overall estimate of the discount rate is now statistically significant, but negative (-0.0054). This difference suggests that the specification in column 1 suffered from an omitted variable bias. The fact

²¹The J-test assumes that at least one instrument is exogenous. It may not necessarily detect a situation in which all instruments are endogenous.

that it is now negative is puzzling, since it implies that future spending is deemed more important than current spending. The implications of a negative discount rate is that utility will approach infinity for periods in the very distant future, given that the subjective discount rate is fixed over time. Under an infinite horizon, a negative discount rate violates the conditions for convergence of equation 1.9. A finite horizon is one possible explanation to this finding. (This finding does not, however, suggest that nonprofit managers have a negative discount rate with regards to their personal consumption.)

Donation dependency has a negative and highly statistically significant effect on the discount rate ($\delta_d = -0.0056$). This is consistent with the agency motive: donors do not influence the spending policy of nonprofits, either because they are unable to do so (a lack of donor control) or because they are not interested in doing so (warm-glow motive dominates). This allows managers of donative organizations to focus on their own priorities, resulting in an emphasis on future spending. (An alternative interpretation is that donative organizations expect a higher overall revenue growth compared to commercial organizations. This would increase the expected spending growth and lead to a lower discount rate for a given interest rate.²² There are no indications that this is the case.)

Size also has a negative and statistically significant effect on the discount rate ($\delta_s = -0.0051$), implying that large organizations focus more on the future. This is consistent with large organizations placing a higher value on survival or that they have more long-term

²²This is easily seen in the exact log-linearized model (equation 1.6), where a larger dependent variable requires a larger intercept, i.e. a decrease in ρ_i .

commitments than smaller organizations. (An alternative interpretation is that larger organizations have higher expected revenue growth than smaller organizations, leading to a higher expected spending growth and a lower discount rate. There is a small and positive correlation between size and growth. Thus, I can not rule out this explanation, although there is no theory supporting it.)

5.2 Elasticity of intertemporal substitution

The overall EIS estimate is substantially higher when organizational characteristics are included (1.1993). This is most likely caused by the organizational characteristics being endogenous with regards to the second (or a higher) moment of spending growth. (The interest rate is exogenous since it is known at the time of the spending decision.) This result is consistent with the finding from the log-linear approximation model below (see section 6.1). That model omits the second and higher moments of expected spending growth terms and shows no increase in the overall EIS estimate when organizational characteristics are introduced. The fact that the bias is negative indicates that it is driven by size, which has a negative effect on EIS, whereas donation dependency has a positive effect.

The overall EIS estimate in column 2 is higher than those estimated for household consumption growth, which suggests that an EIS estimate of 0.3-0.8 provides the best fit with U.S. consumption data (Attanasio and Weber, 2010). If individuals consider charitable donations to be a normal consumption good, as suggested by Steinberg (1990), this tells us that an increase in the interest rate will lead

to a reduction in nonprofit spending that is almost twice as large as the reduction in public donations caused by the interest rate increase.

Given that the EIS estimate in column 1 is most likely biased, column 2 is more relevant for studying the EIS and the individual effects of size and donation dependency. A higher dependency on donations leads to a significantly higher elasticity ($\pi_d = 0.5291$). The interpretation of this estimate is that a one percent higher (ex ante) donation dependency results in an increased elasticity of 0.005291 on average and is significant at the 1% level. (The difference in EIS between an organization with 0% donation dependency and one with 100% donation dependency is 0.5291.) This result supports the hypothesis that donative organizations can decide more freely on the quantity of services delivered in a given period, with its funders being in a poor position to influence (or even observe) the outcome.

Size has a negative effect on EIS that is statistically significant at the 10% level. A one percent increase in (ex ante) revenues leads to a decrease in EIS of 0.0922, implying that large organizations respond less to changes in the interest rate than small organizations. This finding is consistent with large organizations being unable to adapt their spending as easily as small organizations, possibly due to higher adjustment costs in the form of operational rigidity.

The specification in column 2 model now includes seven additional instruments: ex ante donation dependency, ex ante size, the interaction terms between lagged interest and size and lagged interest and donation dependency, as well as the three cross products between size and donation dependency. With six parameters to be estimated,

the model has four degrees of freedom. The test for overidentification now has significantly reduced power and rejects the model. Another method to assess the model is to test if the characteristics added in column 2 create a statistically significant improvement in the fit of the model. The p values of the Wald tests are zero. This tells us that adding donation dependency and size significantly improves the fit of the model, both jointly and independently.²³

In sum, my results show that it is important to include organizational characteristics and that failing to do so will lead to biased estimates as discussed by Attanasio and Low (2004) and Carroll (2001). The strong effects of organizational characteristics on both the subjective discount rate and the elasticity of intertemporal substitution also cast doubt on the interpretations by Lawrence (1991). Although the setting of that paper is very different to this, it is likely that the socio-economic characteristics determine the consumption decision not only through the subjective discount rate, as suggested in that paper, but also through the EIS.

5.3 Predicted subjective discount rate

To illustrate my results, I predict the subjective discount rate, ρ_i , for different types of organizations using the estimates generated in table 1.2. Each cell in table 1.3 shows the predicted discount rate for a given size-donation dependency quartile.

As expected, the highest subjective discount rate is found for the smallest and most commercial organizations (top left cell). The low-

²³My choice of Wald tests over likelihood ratio tests tests should not affect the p values, since the tests are linear.

Table 1.3: Predictions of subjective discount rate
 $(\rho = \bar{\rho} + \delta_d X^d + \delta_s X^s)$

Size	Donation dependency			
	Q1	Q2	Q3	Q4
Q1	0.0111*** (0.0028)	0.0100*** (0.0027)	0.0087*** (0.0025)	0.0076** (0.0028)
Q2	-0.0012 (0.0012)	-0.0017 (0.0011)	-0.0027** (0.0010)	-0.0057*** (0.0013)
Q3	-0.0082*** (0.0010)	-0.0082*** (0.0010)	-0.0093*** (0.0009)	-0.0127*** (0.0013)
Q4	-0.0177*** (0.0020)	-0.0178*** (0.0020)	-0.0174*** (0.0018)	-0.0204*** (0.0021)
Median	-0.0053*** (0.0009)	-0.0053*** (0.0009)	-0.0053*** (0.0009)	-0.0053*** (0.0009)
p values by quartile (different from median)	0.000 0.000 0.000 0.000	0.000 0.000 0.000 0.000	0.000 0.000 0.000 0.000	0.000 0.791 0.000 0.000

Standard errors in parentheses

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

est rate is found in the cell containing the largest size quartile and highest donation dependency quartile (bottom right cell). The difference between the top and bottom size quartile ranges from 2.6 to 2.9 percent. The difference in the discount rate between the most and least donation dependent quartiles is less than 0.5%. This tells us that size accounts for a larger effect on the discount rate than donation dependency. The smallest size quartile is the only group where all organizations have discount rates that are significantly larger than zero. Given the precision with which the discount rate estimates are generated, virtually all cells display discount rates that are significantly different from the median (p values are very low) and zero.

The only exceptions are those cells that either contain the median organization or where the discount rate switches from positive to negative.

5.4 Predicted EIS

Analogously to table 1.3, table 1.4 illustrates the predicted estimates of EIS, ϕ_i , for different quartiles of donation dependency and size.

Table 1.4: Predictions of EIS
($\phi = \bar{\phi} + \pi_d X^d + \pi_s X^s$)

Size	Donation dependency			
	Q1	Q2	Q3	Q4
Q1	1.3176*** (0.1675)	1.3205*** (0.1628)	1.4474*** (0.1859)	1.8063*** (0.2910)
Q2	1.0952*** (0.0775)	1.1062*** (0.0760)	1.2265*** (0.0900)	1.5589*** (0.1861)
Q3	0.9685*** (0.0719)	0.9868*** (0.0685)	1.0936*** (0.0612)	1.4346*** (0.1464)
Q4	0.7972*** (0.1325)	0.8082*** (0.1299)	0.9298*** (0.1001)	1.2902*** (0.1271)
Median	1.0741*** (0.0640)	1.0741*** (0.0640)	1.0741*** (0.0640)	1.0741*** (0.0640)
p values by quartile (different from median)	0.081 0.454 0.014 0.032	0.068 0.227 0.018 0.036	0.022 0.008 0.484 0.133	0.008 0.006 0.010 0.091

Standard errors in parentheses

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

EIS estimates range from 0.7972 for the largest and most commercial organizations to 1.8063 for the smallest and most donation dependent. All are significantly larger than zero at the 1% level. All groups have a predicted EIS that is significantly different from the

median, except for those cells which contains the median organization.

The EIS estimate can be split into two separate effects. One is the *substitution effect*, which is due to the change in the relative “prices” between current spending and future spending. An increase in the interest rate corresponds to a decrease in the price of future spending and the substitution effect captures the corresponding increase in spending growth (a decrease in current saving and an increase in expected future spending).

The second effect is the *income effect*, which has the opposite sign: a higher interest rate leads to a decrease in spending growth. This is due to the fact that a given target level of future spending can now be achieved with less saving. An EIS of one indicates that these effects exactly offset each other and corresponds to logarithmic utility. An EIS below one means that the income effect dominates, which is what research on private consumption has shown. For nonprofit organizations, on the other hand, the opposite holds true. Most cells in table 1.4 have a predicted EIS in excess of one. Hence, the substitution effect dominates the income effect for most nonprofit organizations. Interestingly, even the lowest EIS estimate is at the top of the range found for household consumption.

The difference in EIS estimates between the largest and smallest size quartiles is approximately 0.5. In comparison, the difference between the least donation dependent and most donation dependent quartiles is also approximately 0.5. This implies that the effects of donation dependency and size are similar in magnitude.

6 Discussion

6.1 Log-linear approximation

Virtually all studies on individual and household consumption based on the Euler model have been made using the first-order log-linear approximation, since the underlying data is plagued with severe measurement error. The accurateness of my data allows for a unique comparison of the non-linear Euler model to the log-linearized approximation. Both models have in common that the precision of estimates increases with sample period length and decreases with variability of income (Attanasio and Low (2004)). Comparisons of the two models based on simulated data have yielded a mixed picture of the bias of the estimates from the log-linear approximation.

Whereas the non-linear model holds by construction and indirectly includes all moments of the expected spending growth, the log-linear approximation is based on the (rather strong) assumption that the second and higher moments can be ignored. Most of the literature on this problem has focused on the second moment of expected spending growth. Finding a suitable proxy for it is more difficult than one might first expect. Browning and Lusardi (1996) points to the important fact that the second moment depends not only on expected revenue volatility, but also on cash-on-hand (a variable not typically available in the datasets used in household finance). Thus, future revenue variance is in itself not a adequate proxy for the variance term of spending growth.

Carroll (2001) provides significant detail as to why a log-linear ap-

proximation will provide inconsistent estimates and even goes as far as to recommend abandoning any further estimations using it. The main problem, he argues, is that the higher-order terms (not necessarily only the second-order term) resulting from the approximation can not be ignored, because they are endogenous with respect to one or more of the revenue growth, the interest rate and the parameters in the model. Furthermore, Carroll (2001) suggests that the non-linear model (used in this paper) should be applied if and only if spending data does not suffer from measurement error (see also Attanasio and Weber (2010)).

The verdict is still out on the usefulness of the log-linear approximation. Simulations run by Attanasio and Low (2004) show that the model does have some merit if it is based on time-series data as opposed to cross-sectional data.

The classic first-order approximation is given by

$$\Delta c_{it+1} = \alpha_{it+1} + \phi_i r_{it,t+1} + u_{i,t+1} = 0 \quad (1.10)$$

This equation ignores k_{it+1} in equation 1.6 (or assumes it to be constant). As a result, the intercept now becomes $\alpha_{it+1} = -\phi_i \ln(1 + \rho_i) + k_{it+1}$. In particular, omitting the second moment will lead to a negative bias of the discount rate estimate, ρ_i , assuming agents are prudent (see section 6.2 below), since $\sigma_{\Delta c_{it+1}}^2$ is always positive.²⁴

For the parameterization of the log-linear model, I make the ad-

²⁴A negative bias in the discount rate is equivalent to a positive bias in the discount factor ($\frac{1}{1+\rho_i}$).

ditional approximation²⁵

$$\ln(1 + \rho_i) \approx \rho_i = \bar{\rho} + \mathbf{X}_i' \delta \quad (1.11)$$

Inserting the expressions for the discount rate and the EIS (1.8 and 1.11) into the first-order approximation (equation 1.10) and rearranging yields the following extended log-linear approximation model.

$$\begin{aligned} \Delta c_{i,t+1} = & -\bar{\phi} \bar{\rho} + \mathbf{X}_i' (\bar{\phi} \delta + \bar{\rho} \pi) + \mathbf{X}_i \mathbf{X}_i' (\delta \pi') + \\ & + \bar{\phi} r_{it,t+1} + (r_{it,t+1} \mathbf{X}_i)' \pi + u_{it+1} \end{aligned} \quad (1.12)$$

I use GMM to generate estimates of equation 1.10 and 1.12 using the same data and the same instruments as in the case of the non-linear estimation (table 1.2). (Note that equation 1.12 includes non-linear restriction on the parameters.) The results are shown in table 1.5.

Comparing the results in table 1.5 to those in table 1.2 quantifies the shortcomings of the log-linear approximation. The estimate for the subjective discount rate in the log-linear model is statistically significant and much more negative than that obtained by the corresponding non-linear specification. This result holds also when organizational characteristics are included. This result confirms that omitting the variance of spending growth will lead to a negative bias of the discount rate. Another indication that the non-linear model

²⁵The results are very similar if the approximation is not made.

Table 1.5: Log-linear approximation of Euler equation

	(1)	(2)
$\bar{\rho}$		0.0520*** (0.0152)
δ_d		-0.0190** (0.0081)
δ_s		-0.0053*** (0.0010)
$\rho = \bar{\rho} + \delta_d X^d + \delta_s X^s$	-0.0458*** (0.0052)	-0.0389*** (0.0037)
$\bar{\phi}$		1.1084*** (0.2257)
π_d		0.2983** (0.1167)
π_s		-0.0279** (0.0124)
$\phi = \bar{\phi} + \pi_d X^d + \pi_s X^s$	0.6513*** (0.0554)	0.7450*** (0.0514)
Observations	122,967	119,038
Hansen's J	189.640	193.924
Hansen's J (p value)	(0.000)	(0.000)
Degrees of freedom	1	4
Wald test (p value): $\delta_d, \delta_s, \pi_d, \pi_s = 0$		0.000
Wald test (p value): $\delta_d, \pi_d = 0$		0.000
Wald test (p value): $\delta_s, \pi_s = 0$		0.000

All standard errors are clustered at level of organization.

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

performs better than the log-linear approximation is that the over-identification test rejects the instruments at any p value for the first

specification. This was not the case in the non-linear model.

Interestingly, the EIS estimates in the two models are very similar when no organizational characteristics are included. However, as seen in table 1.2, it is necessary to include these variables to avoid biased estimates. When size and donation dependency are included in the log-linear approximation, the estimates remain unchanged (which is not the case for the estimates generated by the non-linear model). The fact that there is no increase in the overall EIS estimate from including organizational characteristics is consistent with size and donation dependency being correlated with the second or higher moments of spending growth as suggested above.

In sum, my results show that the log-linear approximation model does a poor job of estimating the discount rate and the EIS. The effects of donation dependency (δ_d, π_d) and size (δ_s, π_s) have the same signs and are also statistically significant, but the magnitudes of the estimates are different and are likely to be incorrect due to the classic problem of omitting the second and higher moments of expected spending growth.

Adding organizational characteristics significantly improves the fit of the linear approximation model. The p values from Wald tests indicate that I can strongly reject that the coefficients related to donation dependency or size should be zero, either jointly or independently.

6.2 Prudence

Throughout the paper, I have interpreted ϕ_i as the elasticity of intertemporal substitution. However, an important consequence of assuming CRRA utility is that ϕ_i captures not only EIS, but also prudence (precautionary saving). More specifically, if I denote prudence by η_i , then estimates for EIS and prudence are restricted under CRRA to satisfy $\eta_i = \frac{1}{2}\phi_i$ (see for example Browning and Lusardi (1996)).²⁶ Thus, I may mistakenly interpret precautionary saving as evidence of EIS. The negative bias seen in the estimate of the discount rate from the log-linear model suggests that precautionary saving does play a role.

Note that precautionary saving (a flow measure) should not be confused with precautionary savings (a stock measure). Precautionary saving is a response of current spending to future risk and precautionary savings is the additional wealth owned as the result of past precautionary behavior (Carroll and Kimball, 2008). Kimball (1990) defines relative prudence as $\eta_i = -C_{it} \frac{u'''}{u''}$ and interprets it as the “propensity to prepare and forearm oneself in the face of uncertainty”. In other words, it is the reduction in current spending and increase in current saving due to uncertainty about the future.

In section 6.1 above, I noted that the estimates for ϕ_i was the same for both the non-linear model and the log-linear approximation when no organizational characteristics were included. In other

²⁶This is easily seen in the exact log-linearized Euler model (equation 1.6) where prudence is captured by the coefficient of the volatility of consumption growth ($\sigma_{\Delta c_{it+1}}^2$).

words, including the second and higher moments of spending growth in the regression did not change the estimate of ϕ_i . This finding suggests that the CRRA model could be correct and that $\eta_i = \frac{1}{2}\phi_i$. However, this reasoning becomes more complicated when organizational characteristics are introduced in column 2. Here, there are several factors that play a role and the effect of the omitted moments can not be isolated.

An important policy-related consequence of precautionary saving is that that social welfare decreases with both the level of revenue uncertainty (which affects spending volatility, $\sigma_{\Delta c_{it+1}}^2$) and the level of precautionary saving, η_i (see Browning and Lusardi (1996)). Both of these cause organizations to spend less today, even if the expected level of revenue remains the same.

Dynan (1993) attempts to estimate the importance of prudence in the context of household saving. She regresses average consumption growth on average squared consumption growth, which is instrumented by various demographic variables, such as occupation, industry and education (which are not correlated with the interest rate). Dynan (1993) finds evidence that suggests a very small and insignificant precautionary saving. However, Carroll (2001) shows that even the proxies used in Dynan (1993) are invalid and that tests of overidentification will be unable to detect this.

A different approach is to estimate the effect of uncertainty on wealth (as opposed to saving). Fisman and Hubbard (2003) studies the amount of net assets held by nonprofit organizations (relative to their spending) and finds that it increases significantly with the

average standard deviation of revenues. The authors interpret this as suggestive evidence of a precautionary saving motive.²⁷

Lusardi (1998) addresses the endogeneity issues raised in Carroll (2001) by using the subjective probability of job loss as proxy for risk. She finds that uncertainty has a very small effect, accounting for between 1 percent to 3.5 of wealth. A drawback of this method is that even if the effect of uncertainty on wealth is identified, it is not clear how to this should be related to the estimates to EIS or intertemporal preferences (Carroll and Kimball, 2008).

6.3 Risk aversion

In addition to EIS and prudence, the parameter ϕ_i also captures relative risk aversion, γ_i , which under CRRA equals $\gamma_i = \frac{1}{\phi_i}$. This fixed relationship means that my estimates of ϕ_i might actually be driven by differences in risk aversion. Relative risk aversion is defined as $\gamma_i = C_{it} \frac{u''}{u'}$ and is a measure an organization's attitude towards uncertainty in spending across *different states of nature*. In contrast, EIS measures an organization's attitude towards uncertainty in spending across *time*. For example, if small organizations have to be more entrepreneurial and less risk averse to survive, I would get the same result: size would have a positive effect on γ_i and a negative effect on ϕ_i . Similarly, if, for some reason, a high dependency on donations reduces risk aversion, I would also find a positive effect on ϕ_i .

²⁷The paper uses the standard deviation of *total revenues* as explanatory variable in an OLS regression. Since total revenues include financial income, which depends on net assets, their volatility measure may be correlated with the error term and their estimates may be biased.

6.4 Orthogonality condition

A violation of the orthogonality conditions would render the Euler model incorrect. This can happen for a number of reasons. Firstly, limited investment by agents in the financial instrument poses such a violation. Vissing-Jørgensen (2002) uses stock market investments as the financial instrument for their savings and finds that the orthogonality condition is indeed violated for agents that do hold a minimum level of their savings in stocks.

In this paper, I use savings in risk-free bonds as the financial instrument for savings and all organizations included in my sample have a positive amount of cash on their balance sheets. Secondly, Zeldes (1989) argues that binding liquidity constraints can prevent poor agents from borrowing in certain years. This is unlikely even for the smallest organizations in my sample, since I have filtered out all observations where revenues are less than \$100,000 and total assets are less than \$250,000 in a year (due to the option to file a different financial form).

Thirdly, the orthogonality condition will not hold if the sample period is too short. Mariger and Shaw (1993) argues that “unanticipated macroeconomic disturbances can cause forecast errors to be correlated with lagged information” in cross-sectional data. The authors show that this problem is more severe the shorter the sample period length. They illustrate this by showing that study using a short sample period (three years) rejects the orthogonality conditions, whereas a different paper using the same data source but with a sample period of ten years does not. In my paper, the average sample

period is 8.90 years, which should be sufficient to avoid this problem.

7 Conclusion

This paper studies the intertemporal preferences of nonprofit organizations. I find that organizations that rely heavily on donations are more patient. Previous research has shown that managers of organizations that have weaker governance focus more on the future. My results therefore support the presence of agency issues and indicate that donors do not influence the decisions of management. Larger organizations are more patient, suggesting that they either have a larger share of long-term projects or are more preoccupied with survival.

My overall estimate of the discount rate is negative, which is puzzling, since it implies that organizations value future spending more than current spending. This result holds for all organizations except for very small organizations, which have a small, but positive discount rate. The assumption of an infinite horizon implies that utility will increase infinitely as time approaches infinity. One possible explanation to this finding is that nonprofit organizations have finite horizons.

I find that donative organizations have a higher elasticity of intertemporal substitution than commercially-oriented organizations. This is consistent with a higher level of spending discretion attached to donations compared to fees paid by customers themselves. Large organizations have a lower EIS which is likely due to the rigidity of larger nonprofit organizations in adapting spending to new opportu-

nities, such as changes to the interest rate. The overall EIS estimate for nonprofits is higher than that found for households, suggesting that a change in the interest rate will affect organizational spending growth more than the growth in charitable contributions made by the public.

I have followed the convention in household finance to interpret the exponential parameter in the isoelastic utility function as the elasticity of intertemporal substitution. However, the results could be partly driven by prudence on the part of organizations. In particular, my results are also consistent with donative and smaller organizations having a higher level of precautionary saving. The distinction between precautionary saving and EIS is important for policy makers to understand. For example, if nonprofits engage in precautionary saving, an increase in the expected revenue risk will have a negative effect on social welfare even if the expected level of revenue remains unchanged, since higher volatility will cause risk-averse organizations to save more and spend less.

Alternatively, my EIS estimate could be driven by differences in the relative risk aversion across different types of organizations. I can not rule out that smaller and donation dependent organizations have to take on more risk than larger organizations. More specific utility functions may allow for the disentanglement of the EIS from prudence and risk aversion. For example, Kimball and Weil (2009) develops a model that disentangles the precautionary saving motive from EIS and the model developed by Epstein and Zin (1991) separates risk aversion from EIS.

My results, which are generated by a GMM estimation of the non-linear Euler equation, confirm the bias of estimates obtained by the traditional log-linear approximation. This bias is caused by an omission of the second and higher moments of expected spending growth, for which no good proxies exist. Scholars studying household finance are acutely aware of this problem, but are left with no other choice due to the measurement error in the consumption measure.

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Paper 2

Biting the Hand That Feeds You: Effects of Embezzlement in Nonprofits*

ABSTRACT. This paper studies how newspaper reports on embezzlement affect donations received by nonprofit organizations. Based on a unique data set on wrongdoings by top managers in nonprofits between 1995 and 2002, I estimate that annual donations decrease by 42.4% after a news report on embezzlement. I account for the possibility that news reports may affect fund raising efforts by estimating the effect on the cost of raising donations. I find that a news report increases the cost of raising one dollar by 4.80 cents on average. These findings provide evidence that the cost of weak governance is very high in nonprofit organizations. Furthermore, my results confirm that im-

*This paper has benefitted from many valuable comments by Per Strömberg and David Robinson.

age enhancement is an important motive for donations.

1 Introduction

In 1992, the United Way of America (UWA) was one of the most well-known charities in the U.S. with revenues of \$3.1 billion. That year, its CEO for 22 years, William Aramony, resigned following an internal investigation and news reports that he had used charitable donations to finance a lavish lifestyle. Mr. Aramony was found guilty of 25 felony charges and was sentenced to seven years in prison. Charitable contributions to the UWA fell dramatically.¹ This paper studies how donors react to information that top management of a nonprofit organization has unlawfully misappropriated money entrusted to them.

Total individual charitable giving in the U.S. amounted to \$316 billion in 2012.² Despite its economic significance, the funding of the sector is fragile with philanthropic donors relying on trust in lieu of verifiable performance measures. This trust is not always justified. Recent reports indicate that the level of undetected fraud in the sector is extensive. According to Fremont-Smith (2002), there is a persistent degree of criminal activity among nonprofits suggesting that the problem is more than “just a few bad apples”. A survey conducted by the Association of Certified Fraud Examiners (ACFE) estimates that nonprofit organizations lose on average six percent of

¹McFadden, Robert D.: "William Aramony, United Way Leader Who Was Jailed for Fraud, Dies at 84" New York Times, November 13, 2011; Gibelman and Gelman (2001)

²Giving USA

their revenue to fraud every year.³ Applying this percentage to the entire nonprofit sector suggests that the loss is approximately \$40 billion each year (Greenlee et al., 2006). This is a substantial amount in itself, but the total cost of fraud is even greater if donors learn about the fraud and reduce their charitable giving in subsequent years. A recent survey found that 26% of Americans “do not trust charities”⁴. Another poll found that only one in ten Americans strongly believes charities are “honest and ethical” in their use of donated funds and that nearly one in three believes nonprofits have “pretty seriously gotten off in the wrong direction”.⁵

A defining feature of a donation is the separation between purchaser (donor) and recipient (beneficiary). Nonprofit organizations are common where purchasers are in a poor position to verify the quality or quantity of services provided (Hansmann, 1996). A typical example is CARE, a humanitarian organization fighting poverty in remote parts of the world. The *non-distribution constraint* prohibits a nonprofit from distributing any part of its profits to officers or other insiders and signals to donors that their funds will be used towards fulfilling the stated purpose (Hansmann, 1980). This restriction provides some protection against moral hazard and can generate a competitive advantage in the market for donations if donors feel protected by the nonprofit status of the organization (Glaeser and Shleifer, 2001). Unfortunately, the non-distribution constraint does not completely eliminate the risk of moral hazard. Managers

³ACFE 2005

⁴Press release: CouponCodes4u.com, Jan 18, 2011

⁵Harris Interactive 2006

of poorly governed nonprofit organizations may still divert funds towards pet projects, extract excessive compensations and even steal from the organization without detection. According to Drucker (1990), nonprofits are typically managed less well than the average business. He mentions as a primary reason the lack of a clear bottom line to set operational goals and measure performance. In addition, the governance of nonprofits is very often weak with the boards of directors typically composed of unpaid, part-time outsiders and sometimes even reduced to a “purely ceremonial role” (Drucker, 1990). Even when the board contains corporate executives, these often “leave their management, planning and fiscal training at the front door” (Stephens, 1995).

In this paper, I create a unique dataset based on a survey of newspaper reports conducted by Fremont-Smith and Kosaras (2003). The survey covers wrongdoings by officers and directors of U.S. nonprofit organizations reported between 1995 and 2002. I collect financial information for these organizations and supplement it with financial data on organizations for which no news reports on embezzlement were published.

I find that news reports on embezzlement lead to a decrease of 42.4% in annual donations. The effect persists for at least three years. (Data limitations prevent me from testing longer-term effects.) Importantly, my estimations exclude organizations that were closed due to the embezzlement, either by court order or voluntarily. This effect translates into an average decrease in donations of \$5,806,330, which is significantly more than the average amount embezzled,

\$143,894. This effect is likely to underestimate the total effect, since I do not consider any effects to volunteer contributions. Pollak et al. (2010) estimates the annual value annual of volunteer contributions in 2005 to \$ 218 billion in the U.S.

There is a possibility that a news report may also affect fund raising efforts of an organization. Such effect would render the preceding estimates biased. To control for this, I create a new dependent variable: cost of donations, defined as fundraising expenses divided by donations. This variable measures of the average cost of raising one dollar of donations. The effect of news reports on the cost of donations are consistent with my earlier results. I estimate that the cost of raising one dollar increases by 4.80 cents after a news report. This corresponds to an increase of 57.1% compared to the average cost of donations in the pre-treatment group of 8.40 cents.

What can non-profit organizations and policy makers learn from this study? The main insight is that weak corporate governance can be very costly. Even minor incidents can lead to a breach of donor trust and have significant negative consequences for an organization. A second finding is that image enhancement is an important motive for donors. I argue that alternative motives, such joy of giving, altruism or an interest in tangible private goods, are not driving the effect. Donations made under these motives should not be affected by embezzlement of an amount that is very small in comparison to total donations.

The remainder of the paper is organized as follows. Section 2 discusses the existing literature on donor motivation and nonprofit

scandals. I describe how my sample is constructed in section 3. Section 4 explains the empirical strategy and the results. Robustness tests are made in section 5 together with a discussion of potential concerns regarding my estimations. Section 6 concludes.

2 Determinants of Donations

To understand how donors may react to embezzlement, it is important to first understand who gives and why. In this paper, I define donations as public contributions plus government grants.⁶ According to this definition, donations account for 38% of total operating revenues in my sample of U.S. charities (public contributions account for 29% and government grants account for 9%). There are four sources of public contributions. The largest group by far is individuals, which accounts for 73% of total public giving. The other three are foundations (14%), bequests (8%) and corporations (5%).⁷

Scholars of philanthropy have long debated why people give to charity. The explanations can be grouped into four underlying motives: warm glow, altruism, fringe benefits and image enhancement. (For a broad discussion of what motivates donors, see Bekkers and Wiepking (2011)).

Under warm glow, individuals derive utility from the act of giving itself (Andreoni, 1989). Donors motivated strictly by warm glow do not care about how their funds are used. Such donors will there-

⁶This is done to increase my sample size. The data on donations stems partly from Part IV-A of Form 990, which does not distinguish between public donations and government grants.

⁷Giving USA 2011

fore not change their behavior after learning about embezzlement. Altruistic donors are concerned only with the output generated to beneficiaries. From this perspective, embezzlement will only matter if it affects the output of an organization. In my data, the ratio of the amount embezzled to annual donations is low (the median value is 3.55%). This implies that the incidents reported in my sample only had a small effect on organizational output. Furthermore, my tests show no sensitivity in the estimated effect of a news report to the amount embezzled.

In the cases of fringe benefits and image enhancement, donors act selfishly and the donation constitutes the price for a private good.⁸ Fringe benefits are tangible private benefits, such as invitations to gala dinners and concerts. The utility from fringe benefits is affected only if the level of embezzlement reduces the amount that a certain level of donation yields. Since the amounts embezzled are small in comparison to annual donations, it is unlikely that the level of fringe benefits provided by a donee will be materially affected.

Donations made under any of the three motives above will not be affected by news of embezzlement of relatively small amounts. This leaves me with one final motive that can explain my results: image enhancement, under which utility is enjoyed from intangible private goods. Glazer and Konrad (1996) develops a theoretical model in which individuals enjoy utility from signaling their wealth by making charitable donations. The main predictions of the signaling equilibrium are that donations increase with population size,

⁸This idea was first expressed formally by Becker (1974).

that donations are only made if income is heterogenous across the population and that government grants will only partly crowd out private donations. The model also addresses the question of why organizations that receive funding from image-seeking donors provide any services at all. The answer is that the strength of the signaling effect increases with the reputation of the organization: donors are more willing to donate to an organization if there is a high likelihood that the intended audience will hear about the donation and agree to it. This is precisely the mechanism at work in my setting. The salience of an organization is negatively affected by news of embezzlement and the intended audience no longer holds a donation to the organization in the same high regard. As a result, donors seeking image enhancement will donate less to an unpopular organization.

There is some empirical literature on image enhancement as a motive for charitable donations. Harbaugh (1998) tests this motive, which he calls the “prestige benefit”, using data on donations made to a prestigious law school. The paper is based on the hypothesis that an image-seeking donor will not donate more than the minimum level that will allow his name to be published in the desired donor category. Any portion exceeding this level provides no additional prestige. He finds that a substantial portion of donations can be attributed to the prestige motive.

Harbaugh’s findings are supported in a recent paper by Buraschi and Cornelli, which uses a dataset from the English National Opera to study motives for charitable giving (Buraschi and Cornelli, 2014). One of the tests is based on the concept used in (Harbaugh, 1998),

that image seeking donors will always donate the minimum amount required for a desired donor category. In their setting, different donor categories have different signaling value, but also involve different levels of private tangible benefits, such as the right to attend special events. The two motives are disentangled by exploiting information on the extent to which donors take advantage of these rights. They find that the image motive increases in importance as the donor categories increase in value.

My paper contributes to this literature by studying the role of image enhancement across a larger sample of organizations as opposed to single organizations. It is the first to introduce variation both across and within organizations with regards to their attractiveness as signaling vehicles. My findings are consistent with the model developed in Glazer and Konrad (1996) and the empirical results found in previous literature.

My results are also consistent with papers studying for-profit companies. Karpoff and Lott (1993) studies fraud in corporations and finds that initial press reports lead to a decrease in the stock market value that significantly exceeded the expected costs to the organization of legal sanctions. The authors attribute this penalty to a loss in organizational reputation.

Media coverage has also been shown to affect charitable giving. Eisensee and Strömberg (2007) studies the influence of television news about international natural disasters on the relief efforts by the U. S. government. The authors find that news coverage has a significantly positive effect on disaster relief. In contrast to my paper, they do not

study the effects of a negative event on donations per se, but rather the effect of a natural disaster *making it to the news*. In their setting, donors have complete information about the set of natural disasters, including those that were not reported in media.⁹

A number of studies have documented fraud and other wrongdoings in nonprofit organizations (Gibelman and Gelman (2001, 2002, 2004); Fremont-Smith and Kosaras (2003) and Greenlee et al. (2006)). These papers identify and describe large public scandals in both U.S. and international nonprofits. Very often, the wrongdoings were carried out by the CEO or the CFO and typically went on for years without detection. In addition, it often took several years for a case to be resolved. These papers agree that the ultimate problem is one of weak governance with the board of directors not properly fulfilling its fiduciary duties. Typically, the role of the CEO is elevated to be equal to board members, allowing him or her to appoint board members and operate independently of board oversight. However, none of these papers study the effects of wrongdoings, for example if donors penalize affected organizations by reducing — or completely discontinuing — their donations to them. My paper extends this discussion by quantifying the cost to nonprofit organizations of weak governance.

⁹In their setting, there is a risk that news coverage and relief efforts are correlated even if news has no effect on relief efforts. This will happen if news coverage depends on unobserved issue salience, which directly affects aid policy. The authors solve this problem in an elegant way by using the availability of other newsworthy events as an instrument for whether the disaster was in the news. In other words, they ask whether a natural disaster is less likely to receive relief because news about this disaster was crowded out by, for example, the Olympic games.

3 Data

I create a panel of nonprofit organizations in two steps. First, I compile data for organizations which I know were subject to newspaper reports on embezzlement. In all incidents, one or more top managers were accused of stealing, misappropriating or otherwise diverting money from its proper use for personal benefit. Second, I add to this sample organizations for which no newspaper reports on embezzlement were published. (I use the term *embezzlement* to refer to theft of the organization's money, both through criminal and civil wrongdoing.)

My sample of newspaper reports on embezzlement comes from Fremont-Smith and Kosaras (2003) (hereinafter FSK), which presents the results of a survey of newspaper reports involving criminal and civil wrongdoing by officers and directors of charitable organizations. The survey was created through a computer search of 13,111 English-language news sources published between 1995 and 2002. The authors refine the results of the initial search to include only wrongdoings by persons who have primary fiduciary responsibility for the charity involved, such as the CEO or the CFO. This means that the sample is restricted to incidents of serious governance problems.

There are a total of 152 incidents listed in FSK. For each incident, the authors include some limited information, such as the name of the organization, a reference to the first newspaper report, a short description of the wrongdoing (for example "theft of \$28,000") and

the position of the wrongdoer(s) in the organization. The paper also contains information about the length of the prison sentence (if any).¹⁰

FSK does not always state the full and correct name of organizations, which leaves some ambiguity as to the exact identity of some organizations. I have been able to identify 126 organizations by matching manually the information in FSK against two different nonprofit databases, Guidestar Premium and the National Center for Charitable Statistics (NCCS). I drop two incidents that are considered Ponzi schemes in FSK and three that were subsequently closed by court order. The reason is that I am interested in the reactions of donors to the wrongdoings of organizations that are otherwise operating normally. Nine incidents are dropped because they involved actions that did not have a direct effect on donors, such as defrauding of government or bribery.

My focus is on organizations that rely on donations. This category is captured by charitable organizations that are tax exempt under IRC code 501(c)3.¹¹ Two organizations are registered as 501(c)4 and are therefore excluded from my sample.¹² There are two differ-

¹⁰Information about prison sentences were sometimes published subsequent to the initial newspaper report.

¹¹The IRS requires that such organization “must be organized and operated exclusively for exempt purposes set forth in section 501(c)(3), and none of its earnings may inure to any private shareholder or individual. In addition, it may not be an action organization, i.e., it may not attempt to influence legislation as a substantial part of its activities and it may not participate in any campaign activity for or against political candidates.”

¹²Unlike 501(c)(3) organizations, 501(c)(4) organizations may also participate in political campaigns and elections, as long as its primary activity is the promotion of social welfare.

ent classifications under section 501(c)(3): public charities and private foundations. Public charities typically rely on many donors for support, while private foundations normally receive contributions from only a few donors. As a consequence, I drop from my sample eleven organizations that are registered as private foundations. For the remaining 99 organizations, I use NCCS and GuideStar Premium to collect financial information for a seven-year period starting four years prior to the date of the initial newspaper report up to two years after the incident. As a minimum, I require data on donations for the year of the initial news report as well as at least one earlier year to be able to estimate the effect of the news report. This data can be found in the Form 990 that organizations file with the IRS.¹³

I append this sample with data on the population of public charities for the years 1991 to 2005. This data comes from the IRS Statistics of Income Sample (SOI) files, a random sample of all organizations that file the Form 990. The IRS classifies all returns filed in a year into strata based on the size of total assets at year-end, with each stratum sampled at a different rate. 100% of returns filed with total assets of \$50 million or more are included in the sample. The remaining returns are randomly selected for the sample at various rates, ranging from about 1 percent to less than 100 percent, depending on the level of assets. If an organization files multiple times for the same year, I use only the latest filing available (643 observations dropped). I drop 928 observations that have a financial year that does not equal 12 months. I exclude 15,182 observations that did not re-

¹³I have used historic data reported in Part IV of the Form 990 if necessary and where available.

ceive donations in any year. To eliminate the role of outliers in the control group, I drop observations with extreme levels of fundraising expenses to donations. The average ratio in the treatment group (pre treatment) is 0.084 and the maximum ratio is 1.048. I therefore exclude observations with a ratio in excess of 2.0 (929 observations dropped). The final control group consists of 21,853 organizations and 148,330 organization-year observations.

The SOI data also adds 67 organization-year observations to the treatment group that were not found in my manual data collection. The final treatment group consists of 58 unique organizations and 368 organization-year observations. Table 2.1 contains a summary of the data available on organizations which were reported to commit wrongdoing. The average amount stolen was \$143,894 and the average prison sentence was 0.72 years.

Table 2.1: Details of initial news reports

	Mean	Median	Min	Max
Amount embezzled (dollars)	143,894	19,086	0	1,255,903
Prison term (years)	0.72	0.00	0.00	9.17
Person implicated was Founder *	0.09	0.00	0.00	1.00
Person implicated was CEO *	0.86	1.00	0.00	1.00
Person implicated was Treasurer *	0.03	0.00	0.00	1.00
Person implicated was Trustee *	0.16	0.00	0.00	1.00
Person implicated was other manager/director *	0.02	0.00	0.00	1.00
Months remaining of financial year (in t=0)	6.21	5.50	1.00	13.00
Age at time of news report **	23.61	21.00	-1.00	61.00
Unique organizations	58			

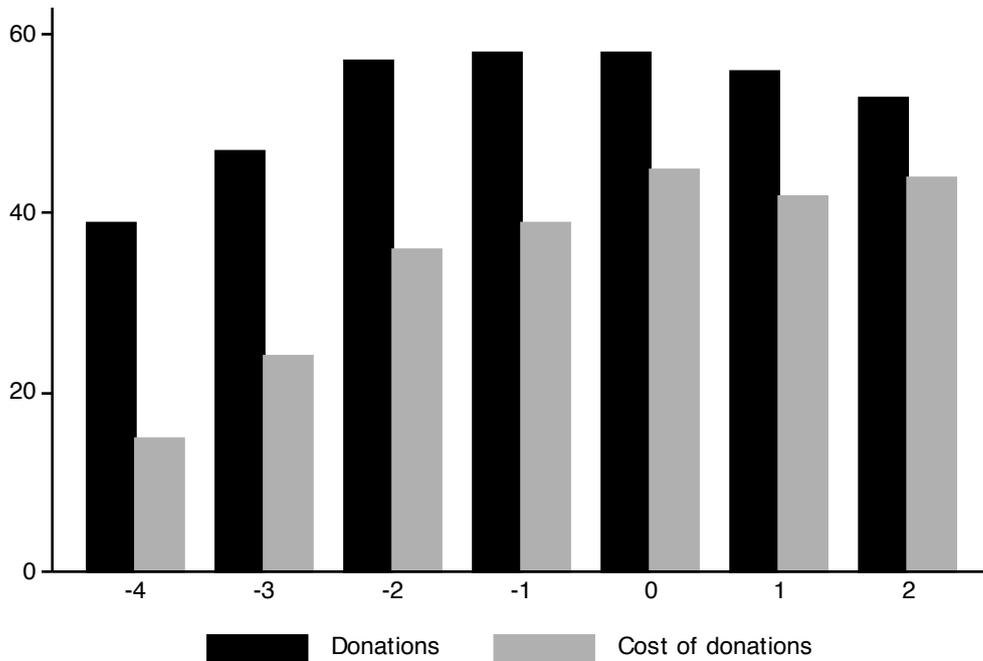
* More than one person can be implicated in an incident.

** Age is calculated using IRS ruling year as proxy for founding year.

Table 2.1 also contains information about the position of the persons implicated in the organization. The most common person to be implicated was the CEO, which is involved in 86% of the incidents. Other positions involved included trustee, founder, treasurer or other manager/director. Note that more than one person can be implicated in an incident. I change the date of the initial report in ten cases where I am able to find an earlier newspaper report than that mentioned in Fremont-Smith and Kosaras (2003). Affected organizations had an average of 6.21 months remaining of the financial year in which the initial news report was published. Age at the time of the initial news report is estimated using the so called "ruling date" as a proxy for the founding year.¹⁴ The average organizational age at the time of publication was 23.61 years. Figure 2.1 illustrates the number of observations by event year for the two key variables, donations and cost of donations. There are a total of 368 observations in the treatment group for which data on donations is available, 201 before the year of the news report and 167 during or after. The treatment group data on cost of donations comprises a total of 245 observations, 114 before the year of the publication and 131 during or after.

¹⁴The ruling date indicates when an organization obtained formal recognition of their tax exempt status by the IRS. Since all nonprofits must be incorporated before they register with the IRS, it is possible for the age to be negative.

Figure 2.1: Treatment group size by event year



Note: Initial news report published in time 0. Treatment group only.

Table 2.2 shows financial information for the treatment group (before and after publication of the initial news report) and the control group. Economic variables in both datasets are adjusted for inflation using consumer price data from U.S. Bureau of Labor Statistics and are expressed in 2005 dollars.

The mean and median donations for the treatment group (before the initial news report) is \$13,694,176 and \$584,584, respectively. After the news report, mean donations are \$19,959,973 and median donation has decreased to \$554,066. It should be noted that the higher level of donations after the news report may be driven changes to the sample composition. In my regressions, I eliminate any such effect

Table 2.2: Summary statistics

	Mean	Median	Min	Max	Std Dev	Observations
Treatment group						
Donations (before, \$ mn)	13.694	0.585	0	366.596	42.746	201
Donations (after, \$ mn)	19.960	0.554	0	502.507	76.145	167
Cost of donations* (before)	0.084	0.042	0.000	1.048	0.143	114
Cost of donations* (after)	0.136	0.053	0.000	1.589	0.230	131
Sample period (years)	6.34	7.00	4.00	7.00	0.89	58
Control group						
Donations (\$ mn)	8.281	0.874	0	1,979.555	42.442	148,330
Cost of donations*	0.078	0.000	0.000	1.987	0.167	135,724
Sample period (years)	6.79	6.00	1.00	13.00	3.98	21,853

All values expressed in 2005 dollars. Donations include public contributions and government grants.

* Cost of donations is calculated as Fundraising expenses / Donations

by including organization fixed effects and also use the logarithm of donations to reduce the influence of possible outliers. The corresponding figures for the control group are \$8,281,009 and \$873,505.

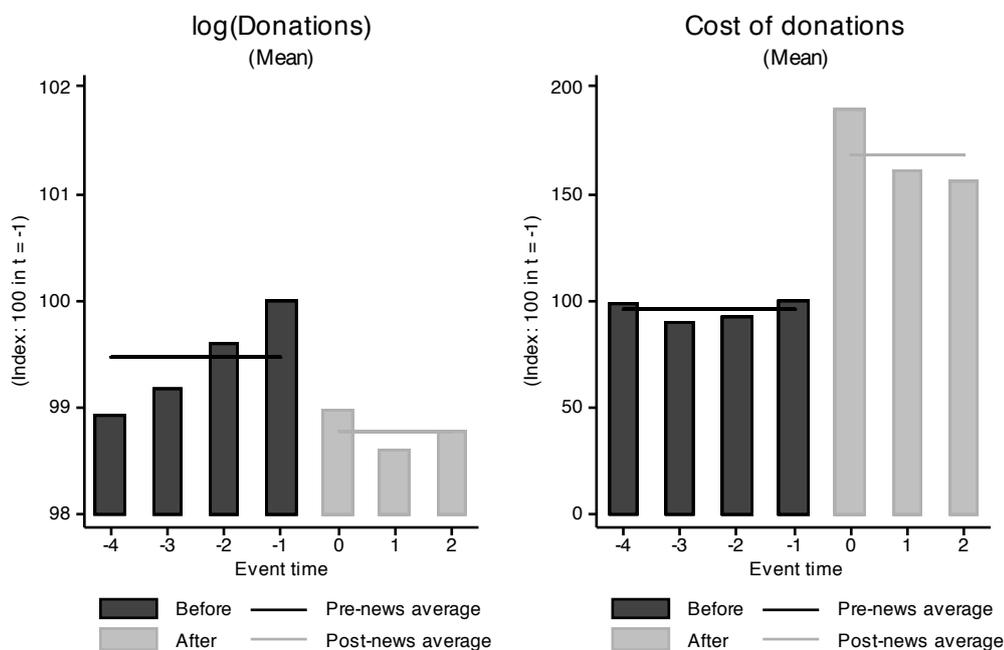
Mean donations are higher in the treatment group. If this reflects a systematically higher level of donations, it would lead to a positive bias in my estimates. However, my estimates show a negative effect on donations of being treated, indicating that my results are not driven by such bias. In addition, the use of organization fixed effects eliminates any time-invariant variation across organizations. The standard deviations are large, \$42,745,800 and \$76,144,835 for the treatment group (before and after, respectively) and \$42,441,547 for the control group.

Fundraising expenses relate to the raising of both public contributions and government grants. The average ratio of fundraising ex-

penses to donations before the news report is 0.084 and 0.136 after. In the control group, the mean is 0.078. Again, the standard deviations are large for both groups: 0.143 and 0.230 for the treatment group (before and after) and 0.167 for the control group. The average sample period is similar for both groups, 6.34 for the treatment group and 6.79 for the control group.

Figure 2.2 shows the development of the two key variables used in the regressions in event time: donations and cost of donations. Both variables are normalized to facilitate a comparison to the base year ($t = -1$). Donations display a decrease following a news report, indicating a negative effect. The cost of donations shows an increase, suggesting that the cost of raising one dollar of donations increases after the publication of a news report on embezzlement.

Figure 2.2: Key variables in event time



Note: Initial news report published in time 0. Treatment group only.

4 Empirical Strategy and Results

4.1 Basic regressions

I use an ordinary least squares (OLS) regression to estimate the effect of news reports on embezzlement on donations. In my first specification, I use a time dummy as explanatory variable, $postnews_{it}$. This variable takes on the value one in the year of the initial news report and in all subsequent years (and zero in earlier years). I use the *initial* news report on a wrongdoing to ensure that the information was not already in the public domain. The basic model is

$$y_{it} = \alpha * postnews_{it} + \lambda_t + \delta_i + e_{it} \quad (2.1)$$

where y_{it} is either $\ln(donations_{it})$ or the cost of raising donations ($\frac{fundraising\ expenses_{it}}{donations_{it}}$). λ_t is a vector of year dummies that captures any systematic variation in donations in a given year, such as common macro shocks or changes in the tax rate, which affect donors' after-tax cost of giving. δ_i is a vector of organization dummies, which eliminate any time-invariant variation specific to individual organizations. e_{it} is the error term.

In the second specification, I make two changes to equation 2.1. Firstly, I allow for the effect to differ by the time lapsed since the publication of the news report. The variable $news_{it}$ takes the value one if organization i was subject to an initial news report on embezzlement in year t and zero otherwise. The inclusion of the first and second lag of $news$ allows me to study if the effect is persistent or transitory. Secondly, I expect any effect to be larger in magnitude if the news report was published in the beginning of a financial year as opposed to at the end of a financial year. To control for this, I substitute the contemporaneous variable, $news_{it}$, for the variable $monthsremaining_{it}$. This variable contains the number of months remaining of the financial year at the time the news report was published. $monthsremaining_{it}$ takes the value twelve if news were published in the first month of the financial year and one if they were published in the final month. If no news were published in a year, the variable takes the value zero. The second specification is summarized by the following regression:

$$y_{it} = \alpha_1 * monthsremaining_{it} + \alpha_2 * news_{it-1} + \\ + \alpha_3 * news_{it-2} + \lambda_t + \delta_i + u_{it} \quad (2.2)$$

Equations 2.1 and 2.2 rest on the assumption that the publication of a news report — for a given organization in a given year — is exogenous with regards to y_{it} ($E[e_{it}] = 0$ and $E[u_{it}] = 0$). There are three necessary conditions for a news report about embezzlement to be published. Exogeneity requires that each condition is uncorrelated with donations over time and across organizations.

First, a manager must steal from the organization. Embezzlement is not limited to small or obscure organizations, but happens in all types of organizations and at any time. Given that an estimated 6% is lost annually to fraudulent activities every year, stealing seems to be a common problem throughout the nonprofit sector. Furthermore, many cases involved highly-reputable organizations, such as United Way of America and the National Association for the Advancement of Colored People (NAACP) (Gibelman and Gelman, 2001). Maksimovic and Titman (1991) argues that financially constrained for-profit companies may be more likely to commit fraud than others. If this is true for nonprofits, and there is a link between financial distress and donations, it would constitute a breach of the identifying assumption. Unfortunately, I do not have data on the wealth of organizations in the treatment group which would allow me to test for this.

Secondly, the incident must be detected by the organization or the authorities. Detection of embezzlement seems to be random.

According to Greenlee et al. (2006), nearly two-thirds of nonprofit frauds are discovered by tips or by accident. If authorities exert a particular effort in a given year to detect fraud, this would be captured by the time fixed effects.

Thirdly, the incident must be reported by media. A few incidents make their way to the public automatically because they are discovered in the course of newspaper investigations. The more common way is that an incident becomes subject to an external or internal audit after it has been detected. However, an audit does not necessarily lead to a formal prosecution and potentially noticed by media. Incidents are only prosecuted if there is a high likelihood of conviction (Greenlee et al. (2006)). According to Fremont-Smith and Kosaras (2003), there are three reasons why even those that are prosecuted are not always made public. Firstly, incidents under investigation are typically not publicly disclosed. Secondly, most disputes are resolved by agreement without the terms of such settlements being made public. Finally, not all cases that are resolved in the courts are reported by news media. The news reports listed in FSK include both small and large organizations and the dispersion in size of the organizations, measured by the standard deviation of donations, is very similar between the treatment group and the control group. This suggests that media does not bias its reporting towards large organizations.

The exogeneity assumption will not hold if there exists some omitted variable that affects both the likelihood of a news report and the level of donations. For example, a highly skilled, but dishonest, man-

ager may be good at generating donations and may also be good at keeping his wrongdoings from being detected or published. Since I include organization fixed effects in all specifications, this would only be a problem if there is variation in management skill over time.

Conventional standard errors will be correct if the error term and the explanatory variable are independently and identically distributed across organizations and over time. In equation 2.1, this implies that for all organizations i and j ¹⁵

$$Cov(postnews_{it}, e_{jt}) = 0 \quad (2.3)$$

and for all time periods t and s

$$Cov(postnews_{it}, e_{is}) = 0 \quad (2.4)$$

Condition 2.3 is satisfied by assumption, since I create a control group that represents the counterfactual for the treatment group. However, the assumption of identical distribution *within* organizations over time (condition 2.4) is less straightforward. If an organization has a particularly high likelihood of being the subject of a news report in one year — perhaps due to a malfunctioning board — it may be also be higher in the next year. To mitigate this, I cluster all standard errors at the level of the organization. Clustering on the panel variable produces a consistent estimate of the standard error when the disturbances are independent, but not *identically* distributed over the panels or there is serial correlation in it (Angrist and Pischke, 2009).

¹⁵The conditions for equation 2.2 are given analogously.

Table 2.3 reports the results from equations 2.1 and 2.2 using $\ln(\text{donations}_{it})$ as the dependent variable.

Table 2.3: Effect of news report on donations

Dependent variable is $\ln(\text{donations})$. *postnews* is a dummy variable that equals one in the year of the news report and all subsequent years. *monthsremaining* equals the number of months remaining of the financial year after the initial publication occurred. *news* is a dummy variable that equals one in the year of the news report and zero in all other years.

	Treatment group		Full sample	
	(1)	(2)	(3)	(4)
postnews	-0.456*		-0.552**	
	(0.229)		(0.228)	
monthsremaining		-0.060		-0.068*
		(0.037)		(0.037)
news (lagged)		-0.420		-0.500*
		(0.270)		(0.267)
news (twice lagged)		-0.423		-0.560*
		(0.303)		(0.318)
Year dummies			✓	✓
Observations	368	368	148,698	148,698
Within R ²	0.0175	0.0157	0.0019	0.0019

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

All specifications include organization fixed effects.

Standard errors in parentheses are clustered at the organization level.

Using the natural logarithm of donations_{it} as dependent variable assumes that the effect of news of embezzlement has the same percentage effect across affected organizations and not the same dollar effect. The interpretation of the coefficient for postnews_{it} , α , gives us the percentage change in annual donations: $e^\alpha - 1$. (For values of α between -0.1 and 0.1, the percentage change in donations approximately equals $100 * \alpha$.)

Column 1 of table 2.3 reports the estimates of equation 2.1 and is based on the treatment group only. It includes the dummy variable $postnews_{it}$ as the sole explanatory variable. In this specification, I include organization fixed effects, but exclude year fixed effects due to the small sample size. The coefficient is negative (-0.456), suggesting that annual donations decrease after the publication of a news report by $e^{-0.456} - 1 = 36.6\%$. The estimate is statistically significant at the 10% level.

In column 2, I report the estimates from equation 2.2 based on the treatment group only. This specification replaces the before/after dummy variable, $postnews_{it}$, with variables that depend on the distance in time from the event. All estimates are negative, implying a decrease in donations, but none is statistically significant.

In column 3, I estimate equation 2.1 again, but this time using the entire sample, including both treatment and control groups. This specification allows me to include year dummies to eliminate the effect of common macro shocks across organizations in a given year. The coefficient for $postnews_{it}$ is now -0.552, slightly more negative than it was in column 1. This estimate is statistically significant at the 5% level. The interpretation of this estimate is that a news report on embezzlement reduces annual donations by 42.4% ($= e^{-0.552} - 1$). In dollar terms, this translates into a decline in annual donations of \$5,806,330 based on average donations of \$13,694,176 million in the pre-treatment sample. This result is substantial in magnitude compared to the average amount embezzled, which was only \$143,894.

In column 4, I run regression 2.2 using the entire sample. The co-

efficient for the contemporaneous effect, $monthsremaining_{it}$, is -0.068 . This means that donations in the year of the news report fall by $e^{-0.068} - 1 = 6.6\%$ for each month remaining of the financial year. Since the average news report in my sample was published almost halfway through the financial year (average is 6.21 months remaining), donations decrease on average by 41.0% ($6.21 * 6.6\%$) in the year of the publication. The coefficients for the once lagged news dummy, $news_{it-1}$, and the twice lagged news dummy, $news_{it-2}$, are -0.500 and -0.560 respectively. The corresponding percentage decreases in donations are 39.3% and 42.9%. All estimates in column 4 are significant at the 10% level. The results in this specification provide a strong indication that the effect is persistent and relatively constant over time. My data includes a maximum of three years after the publication, which prevents me from studying the persistence over a longer period.

As expected, the R^2 is low in all specifications, since there are many other factors that influence the donations received by an organization, such as the wealth of donors, the perceived need for charitable services and other spending decisions made by potential donors.

Next, I address the issue that fundraising efforts, which directly influence donations, may be effected by a news report. The direction of such effect is not evident. It would be positive if affected organizations want to compensate for falling donations by increasing their fund raising efforts.¹⁶ A positive effect of news reports on fundrais-

¹⁶Such “fundraising crowd-in” can be thought of as the opposite of “fundraising crowd-out”, which occurs when fundraising expenses decrease in response to additional government grants (Andreoni and Payne, 2011).

ing expenses means that the estimates in table 2.3 are positively biased and that the true effect is even more negative. Alternatively, the effect on fundraising expenses can be negative if, for example, the management turmoil resulting from a news report leads to a shift in focus away from operations to internal issues. This would mean a negative bias and that my estimated decrease in donations overestimates the magnitude of the true negative effect of a news report.

Fundraising expenses and donations may be endogenously determined (Okten and Weisbrod, 2000), which prohibits the use of fundraising expenses as a control variable in equations 2.1 and 2.2. Instead, I replace $\ln(donations_{it})$ as the dependent variable with the cost of donations, which is calculated as fundraising expenses / donations.¹⁷ Table 2.4 reports the results from equations 2.1 and 2.2 based on both the treatment group and the full sample.

Analogously to table 2.3, column 1 reports the coefficient of the dummy variable $postnews_{it}$ based on the treatment group only. This estimate is positive (0.055) and statistically significant, indicating an increase in the average cost of raising donations from a news report. The interpretation of this result is that the cost of raising one dollar in donations increases by 5.5 cents for the average organization.

Column 2, shows the results of equation 2.2 based on the treatment group. $monthsremaining_{it}$ enters with a positive and highly statistically significant (1% level) estimate of 0.006. This corresponds to an increase in the cost of raising one dollar in the year of the pub-

¹⁷A regression of fund raising expenses on $postnews_{it}$ is not informative, since it will suffer from the same problem.

Table 2.4: Effect of news report on cost of donations

Dependent variable is $\frac{\text{fundraising expenses}}{\text{donations}}$. *postnews* is a dummy variable that equals one in the year of the news report and all subsequent years and zero for earlier years. *monthsremaining* equals the number of months remaining of the financial year after the initial publication occurred (if any). *news* is a dummy variable that equals one in the year of the news report and zero in all other years.

	Treatment group		Full sample	
	(1)	(2)	(3)	(4)
<i>postnews</i>	0.055** (0.021)		0.048** (0.020)	
<i>monthsremaining</i>		0.006*** (0.002)		0.005*** (0.002)
<i>news</i> (lagged)		0.091* (0.046)		0.083* (0.045)
<i>news</i> (twice lagged)		0.041 (0.029)		0.034 (0.031)
Year dummies			✓	✓
Observations	245	245	135,969	135,969
Within R ²	0.0313	0.0500	0.0050	0.0050

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

All specifications include organization fixed effects.

Standard errors in parentheses are clustered at the organization level.

lication of between 0 and 7.2 cents, depending on which month the news report was published. The once lagged news variable is 0.091 and is significant at the 10% level. There is no statistically significant effect for the twice lagged news variable, suggesting that the effect disappears in the third year.

Columns 3 and 4 show the results for regressions using the full sample. The coefficient for $postnews_{it}$ in column 3 is 0.048. This result suggests that a news report on embezzlement increases the

cost of raising one dollar in donations by an average of 4.8 cents. Comparing this figure to the average pre-treatment level of 8.4 cents ($100 * 0.084$) implies an average increase in the cost of donations of 57.1% ($\frac{4.80+8.40}{8.40} = 1.571$).

I can use these figures to calculate hypothetically what the annual decrease in donations would have been if fundraising expenses would have been held constant. The increase in the cost of donations is given by

$$\frac{donationcost_{post}}{donationcost_{pre}} = \frac{fundrsexp_{post}}{donations_{post}} / \frac{fundrsexp_{pre}}{donations_{pre}} = 1.571 \quad (2.5)$$

Keeping fundraising expenses constant implies $fundrsexp_{post} = fundrsexp_{pre}$, which simplifies equation 2.5 to

$$\frac{donations_{pre}}{donations_{post}} = 1.571 \quad (2.6)$$

The implied percentage change in donations can now be calculated by inverting equation 2.6 and deducting one:

$$\frac{donations_{post}}{donations_{pre}} - 1 = \frac{1}{1.571} - 1 = -0.363 \quad (2.7)$$

These calculations — which avoid the potential endogeneity issues of fundraising efforts — suggest that the drop in donations would have been 36.3% if fund raising expenses would have been held constant. This is slightly less than the estimate in table 2.3.

It should be noted that constant fundraising expenses may be a

bad proxy for the counterfactual level of fundraising expenses. If there is a positive underlying trend in fundraising expenses over time, the counterfactual level would have been higher and, as a result, the true effect on donations would be more positive than -36.3%. Nonetheless, these calculations yield an estimate of the effect of a news report on donations that is approximately similar to that found by regressing donations directly on $postnews_{it}$. This supports the conclusion that news reports about embezzlement have a significantly negative effect on donations.

The effect found in column 3 is not persistent. In column 4, I estimate equation 2.2 using the full sample. The results do not change materially from column 1, which uses only the treatment group. $monthsremaining_{it}$ is 0.005 and is highly significant, suggesting a contemporaneous increase of between 0 and 6.0 cents to raise one dollar. In the year following the publication, the cost increases to 8.3 cents. In the third year, there is no longer any significant effect.

The findings in tables 2.3 and 2.4 support the hypothesis that donors are motivated by improving their image. Warm glow can not be the underlying motive, since warm-glow donors do not care about how the money is used. Altruism can also be ruled out, since altruistic donors care only about the output of an organization and there is no material change in the output of affected organizations in my sample (the average amount stolen is only \$143,984). Similarly, fringe benefits are not affected materially given the small amounts embezzled. Hence, utility derived from fringe benefits should not lead to the observed effect of news reports.

This leaves me with the motive of image enhancement as motive for donations. Under this motive, the main concern of donors is to improve their image by “purchasing an intangible private good”. This is done by associating oneself with a particular organization through financial support. Under this motive, the value of the intangible private good to donors is reduced by news of embezzlement, even if the amount embezzled is small. The result is a decrease in donations as donors disassociate themselves from the organization.

4.2 Heterogenous treatment effects

Next, I study if the reputation of an organization matters for the effect of news reports. Organizational reputation can influence the effect of news in two opposite ways. Firstly, donors may be more forgiving towards a well-established organization than a unknown start-up and penalize it less if an incident of embezzlement becomes public. This implies that a high reputation leads to a smaller effect on the cost of raising donations. Secondly, donors may be more surprised and shocked when embezzlement occurs in a highly reputable organization and therefore choose to penalize it more.

To test for this, I adopt the method employed by Okten and Weisbrod (2000) which uses the age of an organization as a proxy for its reputation.¹⁸ I collect information about the age of each organization in the treatment group at the time of the news report. (I do not have age information for the control group.)

¹⁸Organizational size may be another proxy for reputation. However, size will most likely be correlated with the level of donations which would bias the estimates.

I estimate the importance of organizational reputation using equation 2.1 and the treatment group only. I add to the original regression the interaction term $age_{it} * postnews_{it}$. The coefficient of this variable captures how organizational reputation affects my estimate.

Column 1 of table 2.5 reports estimates of a regression without year dummies (but with organization fixed effects). The coefficient for $age_{it} * postnews_{it}$ is -0.001 but is not statistically significant.

Table 2.5: Organizational reputation and severity of incident

Dependent variable is $\frac{\text{fundraising expenses}}{\text{donations}}$. *postnews* is a dummy variable that equals one in the year of the news report and all subsequent years and zero for earlier years.

	(1)	(2)	(3)	(4)	(5)
postnews	0.081** (0.036)	0.052** (0.022)	0.033 (0.023)	0.046** (0.023)	0.067 (0.060)
age * postnews	-0.001 (0.001)				
prisonyrs * postnews		-0.009 (0.006)			
amount * postnews			0.000 (0.000)		
alleged * postnews				0.011 (0.048)	
ceo * postnews					-0.025 (0.064)
founder * postnews					0.053 (0.073)
Year dummies		✓	✓	✓	✓
Observations	245	135,969	135,969	135,969	135,969
Within R ²	0.0339	0.0050	0.0050	0.0050	0.0050

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

All specifications include organization fixed effects.

Standard errors in parentheses are clustered at the organization level.

I test if the severity of the incident affects the magnitude of the effect. I generate additional variables about the individual news re-

ports as interaction variables with $postnews_{it}$. Firstly, $amount_i$ is defined as the amount stolen, misappropriated or otherwise diverted from its proper use by organization i . Secondly, $prisonterm_i$ contains the aggregate prison term for the convicted managers by organization i .¹⁹ I include in this measure any period to be served under house arrest, but exclude any probation period. ($amount_i$ and $prisonterm_i$ can take on positive values for criminal charges only.) Thirdly, there may be a difference whether the news reported contained an alleged incident or if it referred to a confirmed case of embezzlement. I therefore create a dummy variable, $alleged_i$, that takes on the value one if organization i was subject to a news report on alleged embezzlement and zero otherwise. 16% of the news reports were allegations of embezzlement (these are the incidents that were discovered through press investigation).

Finally, I create dummy variables for each position implicated in the news report. (I do not include *other manager/director* and *treasurer*, because these positions were only implicated once and twice, respectively. The variable $trustee_i$ is omitted to avoid collinearity.) The interaction term of each variable with $postnews_{it}$ is included as explanatory variable in equation 2.1 in addition to the standalone $postnews_{it}$ variable. All specifications use the full sample and include time dummies. The results are shown in columns 2 - 5 of table 2.5.

As can be seen, none of the coefficients of interest are statistically significant. The length of a prison sentence does not have any sig-

¹⁹Prison term is a measure of the severity of the punishment and is used as a proxy for the severity of the incident.

nificant effect on the cost of donations. This may be due to the low power of the test which includes only 19 organizations with a positive *prison term*. The amount embezzled does not have any significant effect either (column 3). (Although not statistically significant, this finding is consistent with the underlying motive not being related to the output of an organization, such as altruism or tangible private benefits.) Similar to *prison term_i*, this result may be a result of only 34 organizations having a non-negative *amount*.) The specification including *alleged* also has low statistical power. It is based on nine out of 58 incidents being alleged as opposed to confirmed cases. Finally, I do not find that the effect differs by the position of the person implicated. The tests in table 2.5 would benefit from a larger treatment group.

5 Robustness Tests and Discussion

5.1 Role of outliers

Donations are more skewed in the treatment group than in the control group. This can be seen in table 2.2, where the difference between the mean and the median is greater in the treatment group than in the control group. This could be due to outliers in the treatment group and there is a risk that such outliers could drive my estimates. To control for this, I winsorize the variable “cost of donations” for the treatment group at two different levels (at the high end only): 1% and 5%. Outliers in the treatment group are thereby changed and given the values of the 99th percentile in the first case (1% level). In

the second case (5% level), the values of outliers are changed to the 95th percentile. The results are shown in table 2.6. The estimates from a regression using the treatment group only (columns 1 and 2) are slightly lower than to those obtained in the main regression, indicating that outliers do influence the main results. The maximum values of the winsorized variables are now 1.048 (1% level) and 0.458 (5% level) and compared to a maximum of 1.589 in the underlying variable.) The coefficients in table 2.6 even increase in statistical significance to the 1% level (in three out of the four specifications). In sum, my findings are robust to eliminating outliers and lends support to the conclusion that news of embezzlement have a large negative effect on donations.²⁰

Table 2.6: Winsorized dependent variable

Dependent variable, $\frac{\text{fundraising expenses}}{\text{donations}}$, is winsorized for the treatment group at the high end. *postnews* is a dummy variable that equals one in the year of the news report and all subsequent years and zero for earlier years.

Winsorization level	Treatment group		Full sample	
	1%	5%	1%	5%
postnews	0.049*** (0.018)	0.038*** (0.011)	0.043** (0.018)	0.030*** (0.011)
Year dummies			√	√
Observations	245	245	135,969	135,969
Within R ²	0.0348	0.0590	0.0050	0.0049

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

All specifications include organization fixed effects.

Standard errors in parentheses are clustered at the organization level.

²⁰The results are similar when $\log(\text{donations})$ is used as the dependent variable.

5.2 Donor knowledge

I can not exclude that some donors have better information than what is reported by media. This can have two effects. First, if donors know of the embezzlement before it is reported in a newspaper, my explanatory variable will not constitute new information to these donors. The initial news report will merely be a publication of already known information. For example, the survey by FSK is limited to print media and does not cover other media such as radio and TV. Secondly, donors may know of embezzlements that are not reported by media.

Both of these possibilities mean that my proxy for “donors learning about embezzlement” is imperfect. The effect of superior donor knowledge is similar to a measurement error in the explanatory variable and would cause an attrition bias towards zero. This implies that any effect would render my estimates conservative. The important point is that my explanatory variable, news reports of embezzlement, remains exogenous.

I can test for the first of these two possibilities (donor ex ante knowledge). To do this, I add a leading dummy variable that takes on the value one in the year *prior* to the news report and zero in all other years. Equations 2.1 and 2.2 now become

$$y_{it} = \beta_1 * news_{it+1} + \beta_2 * postnews_{it} + \lambda_t + \delta_i + v_{it} \quad (2.8)$$

and

$$y_{it} = \mu_1 * news_{it+1} + \mu_2 * news_{it} + \mu_3 * news_{it-1} + \\ + \mu_4 * news_{it-2} + \lambda_t + \delta_i + w_{it} \quad (2.9)$$

where the coefficients of interest are β_1 and μ_1 . Table 2.7 shows the results of equations 2.8 and 2.9 using the full sample with cost of donations as the dependent variable. In both specifications, the coefficient for the leading news variable, μ_1 , is positive but not significant. This is consistent with donors not having ex ante knowledge of embezzlement.

5.3 Survival bias

Wealthy organizations that hold a financial buffer may have higher chances of surviving a large drop in donations following a news report. This will cause a bias in my estimates if wealthy organizations are affected differently by news reports on embezzlement. I lack data on organizational wealth to test for this, but it is not evident that organizational wealth should have any effect on how donors react to embezzlement.

5.4 Endogeneity of corporate governance

The publication of a news report of embezzlement may induce changes to the corporate governance of an organization. For example, the organization may feel obliged to increase its financial transparency or replace the CEO with a more integer person. A change in gover-

Table 2.7: Donor knowledge

Dependent variable is $\frac{\text{fundraising expenses}}{\text{donations}}$. *news (leading)* is a dummy variable that equals one in the year prior to the news report and zero in all other years. *postnews* is a dummy variable that equals one in the year of the news report and all subsequent years. *news* is a dummy variable that equals one in the year of the news report and zero in all other years.

	(1)	(2)
news (leading)	0.048 (0.036)	0.049 (0.035)
postnews	0.068*** (0.025)	
news		0.050** (0.023)
news (lagged)		0.101** (0.046)
news (twice lagged)		0.053 (0.033)
Year dummies	√	√
Observations	135,969	135,969
Within R ²	0.0050	0.0051

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

All specifications include organization fixed effects.

Standard errors in parentheses are clustered at the organization level.

nance could affect the attractiveness of the organization in the eyes of donors. Assuming that any such change in governance will result in increased donations, my estimates would be biased upwards and my estimates would err on the conservative side.

I lack data on the actions taken each year following the news report, which means that I can not control for changes in governance

after a news report. (In my sample, most implicated persons were dismissed after the news report.)

5.5 Endogenous donor base

Donors may have superior information about the risk of embezzlement in an organization and select their donees accordingly. For example, the CEO of a nonprofit may be a notorious criminal, but only some donors are aware of this. Donors who dislike embezzlement and have superior information may select into organizations based on CEO type (or some other unobserved organizational characteristic that is correlated with risk of embezzlement). My assessment is that this problem may arise if an organization has a small donor base. All organizations in my sample satisfy the “public support criterium” imposed by the IRS, which requires an organization to receive the bulk of donations from a broad group. Hence, I do not expect differences in donor base to affect my results.

6 Conclusion

This paper studies how donors react to information that top management of a nonprofit organization has unlawfully misappropriated money entrusted to them. People who donate money to an organization have little or no control over how it is spent. This problem of moral hazard is a main reason why donative organizations choose to incorporate themselves as nonprofits (Hansmann, 1980). The trust placed in organizations to manage donated funds is fragile and I provide evidence that breaches of this trust can be very costly.

I create a unique dataset based on a survey of newspaper reports conducted by Fremont-Smith and Kosaras (2003). This survey lists wrongdoings by officers and directors of U.S. nonprofit organizations during 1995 to 2002. U.S. data is particularly useful when studying donations in the nonprofit sector. It is the largest and arguably most developed market for charitable giving and it has the highest dependency on donations in the world at 21% (Andreoni, 2006).

I find that news reports on embezzlement have a large negative effect. Annual donations decrease by 42.4% on average after a news report. This translates into an average decrease in donations of \$5,806,330, which is significantly more than the average amount embezzled (\$143,894). My sample period extends up to three years following a news report and the effect persists throughout this period. This effect is likely to underestimate the total effect, since I do not consider any effects to volunteer contributions.

In a second test, I take into account the possibility that an affected organization might change its fund raising efforts following a news report. I do this by studying how news reports affect the cost of donations, defined as fundraising expenses divided by donations. The magnitude of these results are consistent with my previous findings. The cost of raising one dollar increases by 4.8 cents after a news report. This corresponds to an increase 57.1% compared to the average cost of donations in the pre-treatment group of 8.4 cents. This result implies that donations would have fallen by 36.3% if fundraising expenses under constant fundraising expenses. The effect on cost of donations is only statistically significant for two years. This calls

into question the persistence of the effect of a news report.

My results confirm that image enhancement is an important motive for donations. I can rule out warm-glow as the driver of the effect, since the joy of giving is not affected by the subsequent use of donations. Altruistic donors only care about the output of an organization. Since the amounts embezzled are relatively small in my sample, it is unlikely that organizational output is materially affected. The same argument makes it unlikely that donations are made in expectation of receiving fringe benefits.

An issue that remains outstanding is whether news reports of embezzlement lead to a reduction in the total level of contributions or to a redistribution among unaffected nonprofits by the donor. A related question is whether a news report also has negative spillover effects on the peers of an affected organization.

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Paper 3

What is the Business of Business?*

with David T. Robinson

ABSTRACT. This paper develops a simple theoretical framework for understanding the emergence of new organizational forms, such as socially responsible firms and social enterprises, that embody the private sector's efforts to resolve problems that typically have been within the purview of government and traditional public charities. In our model, firms generate financial and social returns to investors with a negative marginal rate of transformation. Differences in the technologies between the for-profit sector and the social sector give rise to comparative advantages and play a key part in the analysis. This allows us

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to analyze the conditions under which hybrid organizations emerge in place of traditional charities and profit-maximizers. Our framework yields an optimal investment policy, which we call SoFT: the social/financial tradeoff. SoFT typically Pareto-dominates many common social investment principles, such as break-even conditions, social screening or SROI, because it optimally incorporates foregone financial output when considering the cost of producing social output.

1 Introduction

In 1970, Milton Friedman famously argued that the essential mission of business was not to act with social responsibility, but rather to maximize profits (Friedman, 1970). These profits, if only returned to the firm's owners (the shareholders, on whose behalf the management should rightfully act), could be put to charitable purposes as shareholders saw fit. By delegating the task of collecting and disbursing taxes to corporate managers, in Friedman's analysis, shareholders allowed themselves to unwittingly become pawns in a larger battle to derail the capitalist system. Levitt (1958) captures this perspective succinctly when he writes, "the business of business is profits."

In the forty years since Friedman's analysis, business has evolved along a trajectory quite contrary to what Friedman advocated. It seems as if the business of business is more than just business: socially responsible businesses abound, not as instruments for enslaving shareholders to a political will not of their own choosing, but

rather as market-based responses to perceived market failures. As Bénabou and Tirole (2010) note, “society’s demands for individual and corporate social responsibility as an alternative response to market and distributive failures are becoming increasingly prominent.”

This paper develops a simple theoretical framework for understanding the emergence of new organizational forms that embody the private sector’s efforts to resolve problems that typically have been the purview of government. Friedman’s analysis is not just a rhetorical straw man in our analysis: the arguments that we develop hinge critically on a central theme in Friedman’s analysis—the idea that investors always have the ability to take ill-gotten profits and put them to work for social aims of their own desire. Using this statement as our point of departure, we develop a simple theory of how to measure the performance of socially conscious businesses based on shadow prices of foregone investment in complementary activities.

We build a model in which investors have preferences over two types of returns: financial and social. Financial returns require no explanation; social returns can be thought as non-pecuniary returns accruing to the investor such as increased literacy in a developing country or increased biodiversity, although nothing in our analysis hinges on it being associated with positive or negative externalities for others. The investor can choose between a for-profit firm that generates high financial returns but little or no social contribution (for simplicity, think of this as a big corporation), and a socially-motivated organization that is better at producing social returns than generating financial profits (think of this as a charity).

The essential ingredient in the production side of the model is the idea that for-profit firms have a social dimension in addition to the financial dimension, and that charities can make operational choices to mitigate their financial losses, potentially leading them even to make a financial profit. Because we are concerned with understanding the tradeoffs between social and financial output, we assume that all win-win opportunities, such as profit-enhancing "green" products that both generate social output and command higher prices or stimulate demand, have been exploited. After all, firms that face such opportunities need only to rely on traditional profit motives to capture these opportunities. Furthermore, many practitioners argue that doing what's best for society means sacrificing profits (see, for example, *Wall Street Journal*, 6/14/2012). The apparent lack of win-win projects begs the question: should firms engage in social projects with a negative trade-off?

Our model explores competitive equilibria in which both for-profit corporations and charities choose a mix of financial and social returns, and investors allocate wealth optimally between the two types of firms. The mechanics of our model are essentially identical to what Friedman imagined: investors can choose to allocate their own wealth between social and financial returns, and therefore do not necessarily need corporations to act charitably. The question we ask is whether, in equilibrium, corporations optimally act charitably even though investors are perfectly capable of acting charitably on their own account. In other words, we ask "What is the business of business?"

As our analysis shows, understanding this question is key to understanding a series of inter-related questions: For example, what is the connection between corporate social responsibility (CSR) and social entrepreneurship? What is the opportunity cost for businesses engaged in social mission? These questions are intimately interconnected, and their answers follow naturally from the analysis we provide.

The key insight of our analysis is that the optimality of Friedman's prescription hinges critically on certain technological assumptions which need not be generally satisfied. Simply put, the fact that shareholders can take profits and redistribute them to pure charities does not necessarily drive out hybrid organizations. When the marginal rate of transformation between social and financial returns is sufficiently favorable inside for-profit corporations, the competitive equilibrium requires for-profit corporations to produce below the maximal level of financial return and instead produce a blend of social and financial returns. We liken this to Corporate Social Responsibility. Similarly, when the marginal rate of transformation is sufficiently favorable inside charities, they are optimally required to pursue the twin goals of social and financial returns. We liken this behavior to Social Enterprise.

When the marginal rates of transformation between social and financial returns are sufficiently weak within *both* the corporate and the social sectors, investors allocate wealth between two extreme technologies: a pure charity and a pure profit-maximizing technology. Allocations in this economy lie along a line connecting pure profit-

making and pure charitable activities. Points along this line are exactly the equilibria that Milton Friedman and Theodore Levitt prescribed in their admonition against corporate social responsibility. However, when within-sector rates of marginal rates of transformation are sufficiently favorable, this investment rule is no longer optimal and investors will allocate their capital between a socially responsible profit-making firm and a “financially savvy” charity.

It is important to stress that externalities are not a part of our analysis. In other words, it does not matter whether or not social output in our model is a public good. Our focus is different. Our analysis is not concerned with whether the equilibrium level of social and financial output in the decentralized economy (as envisioned by Friedman) coincides with what a social planner would prescribe. In fact, for simplicity, our model—as is implicit in Friedman’s analysis—is designed so that the standard welfare theorems hold and the decentralized equilibrium is Pareto optimal. We are simply concerned with understanding the emergence of corporate social responsibility and social entrepreneurship as alternatives to “profit-only” big corporations and “pure” traditional charities. Our concern is with the distribution of production of social and financial output, rather than the amount of each; with their organization, not their level.

The paper closest to ours is Kotchen (2006). He analyzes a Lancasterian model in which a consumer can choose between an exogenously specified pure private good (e.g., coffee), a pure public good (environmental biodiversity), or a hybrid good (shade-grown coffee that is grown under environmentally friendly conditions), and

asks when the availability of the good will raise or lower the equilibrium level of the characteristics embodied in the public good. While Kotchen (2006) is concerned with the equilibrium levels of Lancasterian characteristics available from goods of exogenously specified sources, our goal in some sense is to endogenize the source of the social output production. Hence, our analyses are complementary.

Our work is also related to Graff Zivin and Small (2005), and Baron (2007). These papers examine the conditions under which CSR might crowd out individual charitable contributions, and how the presence of CSR-initiatives affects the market values of the firms that embrace these initiatives.

No paper to date, however, distinguishes between different types of CSR. One way is to generate social output with the use of a firm's *internal* production technology. Another is to use the technology of an *external* technology, such as when a firm donates money to a charitable organization (corporate philanthropy) or invests money into a social enterprise (see Section 5.3). Our paper studies both the trade-off faced by investors, which captures how much they value their social returns in relation to their financial returns, as well as the trade-off between social and financial performance inherent in a firm's production function.

Although our model is abstract, a number of concrete ideas emerge from our analysis. First, our model gives an account of the origins of social enterprise in its different forms. Some have argued that corporate social responsibility is a response to the re-orientation of consumer preferences that coincides with heightened concerns about

environmental sustainability, social welfare, etc. (for example, the quote from Bénabou and Tirole (2010) suggests this point of view). Our analysis makes it clear that this cannot be the whole story. In our model, if this were the whole story, then under the parameter configurations that Friedman envisioned, we would simply see investors allocating a greater fraction of their wealth toward the pure charity; this would strictly dominate the production bundle achieved through a mix of social enterprise and corporate social responsibility. For CSR to arise in a competitive equilibrium, it must be the case that the big corporation can exploit opportunities that the investor cannot. This would be the case, for example, if information asymmetries created complementarities between financial and social returns that were visible to the corporate manager but not to outsiders.

The second idea concerns how to evaluate social businesses. Among investors in social enterprises, there is a trend towards sustainability in charitable work—a notion that socially minded businesses must break even financially in order to be viable. In the for-profit sector, it has become common for social investors to engage in screening of companies that do not meet minimum social returns. Our analysis shows that it is generally sub-optimal to impose break-even constraints on social entrepreneurs or apply social screening on for-profit companies. This follows the failure of these investment policies to take into account the tradeoff between social returns and financial returns that is offered in alternative investments.

Rather than evaluating social businesses by break-even conditions, social screening or by social return on investment (Emerson et al.,

2001), we advocate the SoFT yardstick: the Social/Financial Tradeoff. As our analysis illustrates, SoFT is the appropriate way to think about sustainability in the context of a broader investment landscape with firms using different technologies to generate social and financial returns. Break-even conditions generate what are essentially Type I and Type II errors: they both fail to screen out profitable social businesses that offer poor social value per unit of foregone financial return, and they screen out financially unprofitable social businesses that are so attractive in terms of the social value per unit of foregone financial return that they are worth subsidizing. An analogous problem applies to social screening of for-profit firms.

Social return on investment typically fails to account for the possibility that close substitutes to social enterprise can sometimes be produced by socially responsible corporations. Our analysis stops well short of offering a ready-to-use formula for contrasting social and financial gains. Instead, it provides an approach to thinking about tradeoffs. The hope is that thinking differently about tradeoffs will guide practice and implementation in new directions.

The remainder of the paper is organized as follows. Section 2 reviews background work in this area. The basic model is laid out in Section 3. Section 4 compares the investment rules that emerge from our model with three commonly used rules in practice: break-even conditions, social screening, and social return on investment (SROI). In Section 5, we explore how complementarities between social and financial activities determine the shape of the technology frontiers, and offer some extensions to the model based on these observations.

Section 6 concludes.

2 Literature Review

Our paper relates to two strands of literature: corporate social responsibility of for-profit firms and the commercialization of non-profit organizations. The former has grown significantly in recent years, whereas the latter remains very limited.

Bénabou and Tirole (2010) identify three different motives for corporate social responsibility. The first is profit, whereby firms engage in social activities for the purpose of increasing the bottom line. The second is managerial agency which involves rent extraction by managers investing in pet projects of charitable nature. The third motive is delegated philanthropy, in which managers shift resources towards increasing social output on behalf of approving shareholders. These three motives build on a model developed by Baron (2008) that explains why managerial compensation contracts may contain a link to social performance. In Baron (2008), the firm may be rewarded for social behavior by consumers (profit motive), managers may have personal preferences for social behavior (agency issue), and social expenditures may attract a specific shareholder clientele (delegated philanthropy).

In our model, we assume all profit opportunities have been exploited by firms and that no agency issues exist between firms and their shareholders. Hence, our model concerns only the last of these motives: delegated philanthropy. Bénabou and Tirole (2010) further distinguishes between two fundamental justifications for engaging in

corporate philanthropy. One essentially argues that having a corporate manager act on behalf of a large group of like-minded shareholders interested in transferring money to a social cause may be an efficient way to overcome burdensome transactions costs otherwise associated with each shareholder acting individually. The second involves the possibility that corporations may be uniquely positioned to benefit society by behaving well in the absence of government oversight. Our analysis falls into the second category. However, rather than viewing delegated philanthropy in the narrow sense of shareholders tasking a manager with the job of making philanthropic donations on their behalf, we model delegated philanthropy as the manager's ability to re-direct the inputs to production in such a way that charitable outcomes are achieved that would otherwise be infeasible by the donor alone.

The profit motive has received significant attention by academic scholars. Numerous papers try to estimate the effect of corporate social responsibility on financial performance, but the evidence of different business practices is mixed. On the one hand, Edmans (2011) finds that companies recognized in the "Top 100 Places to Work" in terms of how they treat their employees earn risk-adjusted rates of return that are 4% per annum higher than other, non-friendly companies. Similarly, recent work by Bloom et al. (2010) shows that better-managed firms are not only more productive, but they also have a smaller carbon footprint. On the other hand, Hong and Kacperczyk (2009) finds that companies involved in the production of alcohol, tobacco and gaming have higher expected returns than

otherwise comparable stocks, suggesting that investors pay a financial price for a higher social return. A meta-study by Margolis et al. (2007) covering 167 papers concludes that corporate social responsibility has a small, positive effect on financial performance. However, the authors point out that most papers in the study use weak identification strategies, making their results subject to endogeneity bias.¹

The agency motive for CSR has been investigated by Cheng et al. (2013), which uses two quasi-experiments. The first exploits the 2003 Dividend Tax Cut as a shock to managerial ownership and finds that this had a negative effect on CSR spending. The second studies the effects of an exogenous change in firm governance and is based on a regression-discontinuity strategy. Using close proxy contests regarding shareholder-initiated governance proposals, the paper finds that firms in which shareholder proposals *narrowly pass* experience much slower growth in CSR than firms in which the proposals *narrowly fail*. Taken together, the authors take this as support for the hypothesis that managerial agency is indeed a driver of CSR.

The third motive for CSR, delegated philanthropy, can be seen as the flipside of the profit motive. Here, shareholders are expecting a negative financial effect from CSR, whereas under the profit motive, shareholders expect a positive effect. As mentioned above, the empirical literature has not produced a clear picture on the effects of CSR on financial performance. Within the setting of our framework, this result is consistent with the notion that many firms are not located on the production frontier, but rather below it. In order

¹Hong et al. (2011) studies the issue of reverse causality and finds that corporate social responsibility is more prevalent when firms have more financial slack.

words, win-win opportunities still exist for some firms allowing for a positive effect of CSR on their financial performance.² On the theoretical side, the only paper that discusses delegated philanthropy is that by Kotchen (2006) mentioned above.

Kitzmüller and Shimshack (2012) provides an excellent review of the theoretical and empirical research conducted on CSR and the role of the business sector in producing social outputs. They consider different types of theories, some involving an active government and some with no government intervention. Our paper is of the latter type, which, according to Kitzmüller and Shimshack (2012), always leads to a Pareto improvement. Some papers discussed, such as Graff Zivin and III (2005), use Andreoni's (1989) *warm-glow giving*—the fact that donors derive utility from the act of giving—to explain why some individuals prefer to give directly to charitable organizations as opposed to giving indirectly via a corporation. In our paper, we assume that the vehicle used for generating social outputs does not matter to investors.

At the nonprofit-end of the spectrum, there is an ongoing debate among academics and professionals regarding the extent to which nonprofit organizations should focus on commercial activities to generate revenues. Examples include Bradach and Foster (2005), Weisbrod (1998) and Dees (1998) which discuss the risks and rewards associated with nonprofits adopting a commercial objective. The views differ and no generally accepted theory exists. There is also

²Given that the production frontiers of firms are unknown, it is difficult to disentangle empirically when CSR constitutes an exploitation of win-win situations from the case where it is a manifestation of delegated philanthropy.

no empirical evidence that show the effect of commercialization of nonprofits. Our analysis contributes to this literature by providing a framework with which to evaluate the economic efficiency of nonprofit's attempts to focus on commercial viability.

3 Model

Our model is intentionally simple. In subsection 3.1 we lay out the basic structure of the model and define an equilibrium. Then in subsection 3.2 we study conditions under which Friedman's prescriptions hold as equilibrium. In subsection 3.3, we analyze the class of equilibria in which optimal resource allocations involve corporate social responsibility and social enterprise as optimal organizational forms.

3.1 Model setup

There are three types of actors in the model: business-oriented entrepreneurs (denoted B), charity-oriented entrepreneurs (denoted C), and investors. There is a unit mass of each type of actor.

Each type of entrepreneur possesses one unit of labor, e , which they allocate between two tasks. One task generates financial returns, F , while the other task generates social returns, S . Thus, for each entrepreneur of type $i \in \{B, C\}$, we have:

$$e_i^S + e_i^F = 1 \quad (3.1)$$

To keep the model as simple as possible, we assume that business en-

trepreneurs care only about the amount of F they generate, while charity entrepreneurs care only about the amount of S that they generate. This allows us to suppress considerations associated with market-clearing in labor markets and consumption choices of business and charity entrepreneurs.³

The investor is endowed with one unit of capital, k , which she allocates between the entrepreneurs ($k_C + k_B = 1$). She has preferences $u(\cdot, \cdot)$ over both F and S with $u' > 0$ in both arguments and u'' satisfying standard negative semi-definiteness conditions.

Each type of entrepreneur employs a unique technology, which is a pair of functions $S(e, k)$ and $F(e, k)$ that map effort and capital into social and financial output. For simplicity we assume that both functions are homogeneous of degree 1 in capital and, abusing notation slightly, write:

$$S_i = s_i(e_i^s)k_i \quad (3.2)$$

$$F_i = f_i(e_i^f)k_i \quad (3.3)$$

where $i = B, C$ is a subscript for entrepreneurial type. The central technological assumption is that, for a given level of capital from investors, business entrepreneurs are better at achieving financial returns than charity entrepreneurs are, and likewise that charity entrepreneurs are better at producing social output than business entrepreneurs are. Thus, $s_B(e) < s_C(e)$ and $f_C(e) < f_B(e)$ for any $e \in$

³Hardwiring each entrepreneur's utility so that they care only about the amount of the main activity *they* produce, rather than the total amount of S or F produced in the economy, preserves the Pareto optimality of competitive equilibria.

$[0, 1]$.

Of course, the fact that each type of entrepreneur has a unit of labor, supplied inelastically, means that if an entrepreneur of type i is allocating \hat{e}_i to the S activity, then $S_i = s_i(\hat{e}_i)k_i$ and $F_i = s_i(1 - \hat{e}_i)k_i$. That is, because entrepreneurs divide their entire amount of effort between the two tasks, it simplifies notation to express the charity entrepreneur's effort allocation in terms of e_s^C , and the business entrepreneur's effort allocation in terms of e_f^S , suppressing the superscripts. Identifying each type of entrepreneur with an "own" effort and an "other" effort—where the charity entrepreneur's own effort is social effort, the business entrepreneur's, financial—simplifies the description of equilibrium.

In this economy, investors will maximize their utility by offering capital to entrepreneurs of each type that offer the most attractive output combinations. Rather than investing all capital into one type of entrepreneur, investors are typically better off by creating a portfolio of entrepreneurs from both "sectors". This captures the idea from Friedman that investors are fully capable of taking the gains from corporations and put them to work in charities of their own choosing, rather than being forced to rely on corporations to do this on their behalf. Entrepreneurs must adapt to investor demand in order to secure funding. This is done by allocating labor between the two tasks in a way that satisfies investors' demands. These choices result in a competitive equilibrium, defined as follows:

Definition 3.1 (Competitive Equilibrium). *A competitive equilibrium is an allocation of labor by each type of entrepreneur to the two tasks that*

maximizes their utility conditional on the investor's optimal choice of capital, along with an allocation of capital by investors across the two sectors that maximizes their utility. This defines quantities $e_B^{f^}$, $e_C^{s^*}$, and k^* that satisfy:*

$$e_B^{f^*} \in \arg \max u_B(e_B^f) \quad (3.4)$$

$$e_C^{s^*} \in \arg \max u_C(e_C^s) \quad (3.5)$$

$$u'_f(k^*) = u'_s(k^*) \quad (3.6)$$

Equations 3.4 and 3.5 express each entrepreneur's choice in terms of their allocation of effort to the focal activity to stress the fact that business entrepreneurs only care about the level of F_B that they generate, while charity-oriented entrepreneurs only care about the level of S_C that they generate. But, as the preceding discussion makes clear, the fact that entrepreneurs supply effort inelastically means that Equations 3.4 and 3.5 also trivially describe $e_B^{S^*}$ as well as $e_C^{F^*}$.

Constructing an equilibrium can be achieved in two simple steps. The first is to construct the convex hull of the production possibilities (i.e., the production possibilities frontier) defined by the functions s_B, s_C, f_B and f_C . This defines the set of all feasible choices of economy-wide levels of $\bar{S} = S_B + S_C$ and $\bar{F} = F_B + F_C$. The second is to use the investors' capital allocation decision to pin down a point along the exterior of the convex hull that represents the optimal allocation of capital across the two sectors.

The contribution of this paper lies purely in the application of this simple framework to questions surrounding the optimal organization of the production of social output. In that regard, our anal-

ysis is mostly concerned with the first step, because the shape of the production possibilities frontier is what determines whether or not it is optimal for charities to focus some on profits and for businesses to focus some on social output. Accordingly, in the sections below, we focus on the first step and classify equilibria into one of two groups. The first group, Focused-Firm Equilibria, are those in which entrepreneurs allocate all labor towards their preferred activity. These are equilibrium configurations that correspond to the central message that Friedman and Levitt offered, in that they involve business entrepreneurs focusing strictly on financial output and charity-oriented entrepreneurs focusing strictly on social output. The second group, Double Bottom Line Equilibria, consists of equilibria in which both entrepreneurs allocate some labor towards the non-preferred activity. This second type of equilibria goes against the general thrust of Friedman and Levitt, but in fact these equilibria are supported by exactly the same economic mechanism that Friedman and Levitt envisioned.⁴

3.2 Focused-firm equilibria

The central message of Friedman (1970) and Levitt (1958) is that the socially optimal course of action for the investor is to allocate her wealth between the most profitable firm and the most effective traditional charity. The claim is that this dominates alternatives that involve hybrid firms. This rule allows an investor to achieve a continuum of return combinations on her own simply by creating a port-

⁴Equilibria in which only one entrepreneur allocates labor to the non-preferred activity are not explicitly addressed, but are easy to construct as extensions.

folio of the profit-maximizing firm and a pure charity. The purpose of this sub-section is to sketch the conditions under which this is optimal.

It is convenient to define the condition an economy must satisfy in order to generate equilibria that involve investors allocating wealth between firms that maximize profits at the expense of social output and charities that maximize social output without regard to financial considerations. Given the intellectual legacy of Friedman (1970) and Levitt (1958) on this point, we call this the "Friedman/Levitt Condition," defined as follows.

Definition 3.2 (The Friedman/Levitt Condition). *An economy satisfies the Friedman/Levitt Condition if optimal labor choices are $e_C^{s*} = 1$ and $e_B^{f*} = 1$. In this case, $S_C^* = s_C(1)k^*$, $F_B^* = f_B(1)k^*$, and $S_B^* = F_C^* = 0$, and equilibrium aggregate levels of social and financial output can be described by a point (\bar{S}^*, \bar{F}^*) along the line connecting the return pairs $(s_C^{max}, 0)$ and $(0, f_B^{max})$.*

Relatedly, it is also convenient to speak of the "Friedman/Levitt Line" as the line that connects the two corner solutions for each type of entrepreneur; i.e., the line connecting $s_C(1)$ and $f_B(1)$ that establishes the Friedman/Levitt condition.

Focused Firm Equilibria are therefore the set of equilibria in economies that satisfy the Friedman/Levitt Condition. A particular equilibrium level of aggregate output, (\bar{S}^*, \bar{F}^*) , is determined by investors who choose k_B such that $u_s(S, F) = u_f(S, F)$. In these equilibria, all business entrepreneurs maximize financial output and all charity entrepreneurs are pure charities. Figure 3.1 graphically illustrates a

simple economy in which focused-firm equilibria hold.

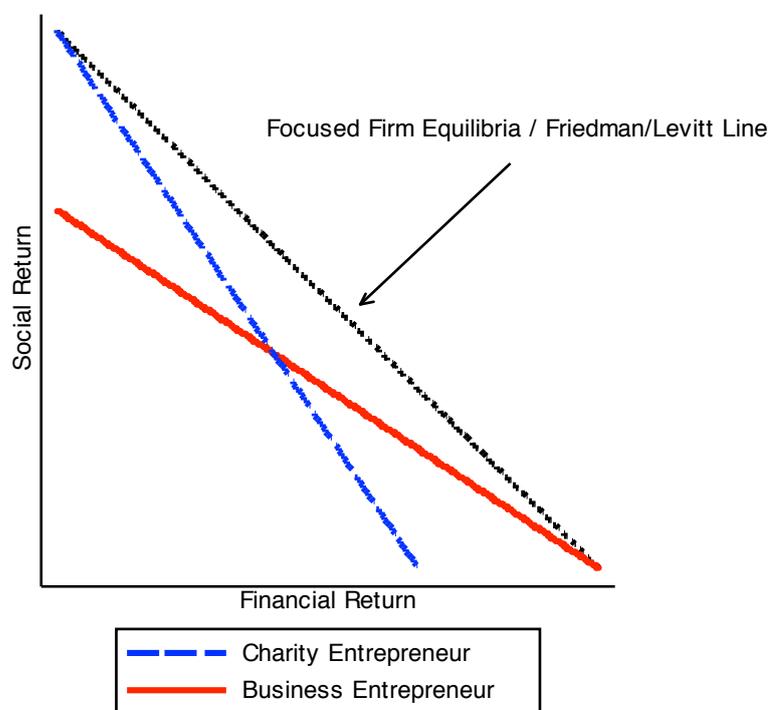


Figure 3.1: Focused Firm Equilibria

In this figure, financial return, F , is measured along the horizontal axis, and social return, S , is measured along the vertical axis. The negative slopes of both technology frontiers capture the idea that all firms face a negative trade-off between generating S and F .

It is natural to ask what conditions lead to focused firm equilibria. As Figure 3.1 illustrates, whether or not a set of technologies will give rise to Focused Firm Equilibria depends on the relationship between the slope of the Friedman/Levitt line and the slopes of the two technology frontiers. A necessary and sufficient condition for a focused firm equilibrium to hold is simply that in the limit, as en-

trepreneurs devote all of their effort to their focal activity (i.e., S for charities, F for business entrepreneurs), the respective marginal rates of transformation be lower in absolute value than the slope of the Friedman/Levitt line. Using the fact that $s_i(0) = f_i(0) = 0$ for both types of entrepreneurs $i = B, C$, the slope of the Friedman/Levitt line can be expressed as follows:

$$\Delta = \frac{s_C(0) - s_C(1)}{f_B(1) - f_B(0)} = -\frac{s_C(1)}{f_B(1)} \quad (3.7)$$

whereas the marginal rate of transformation between S and F for each type of entrepreneur (MRT_i), written in "own-vs-other" terms, is simply given by

$$MRT_C(e_C) = \frac{s'_C(e_C^S)}{f'_C(1 - e_C^S)} < 0 \quad (3.8)$$

$$MRT_B(e_B) = \frac{f'_B(e_B^F)}{s'_B(1 - e_B^F)} < 0 \quad (3.9)$$

Because both these expressions are written in terms of the marginal rate of transformation between each entrepreneur's *own* versus *other* activity, both are negative. (Both are expressed in terms of how much *core* output an entrepreneur has to sacrifice for a unit of *noncore* output.) With these expressions we can formalize this argument with the following proposition:

Proposition 3.1 (Focused Firm Equilibrium). *A focused firm equilibrium (i.e., an equilibrium satisfying the Friedman/Levitt Condition) will hold if and only if $MRT_i(e_i) \leq \Delta$ as $\lim e_B^f \rightarrow 1$ and $\lim e_C^S \rightarrow 1$.*

Proof. This follows immediately from the comparison of the within-sector marginal rates of transformation of S and F for both the charitable and business entrepreneur to the across-sector tradeoff between S and F given by Δ . \square

An intuitively straightforward special case of Proposition 3.1 occurs when the $s_i(\cdot)$ and $f_i(\cdot)$ are constant functions of effort:

Lemma 3.1. *If technology frontiers are linear, then all equilibria are Focused Firm Equilibria, and lie along the Friedman/Levitt Line.*

Proof. The fact that charity entrepreneurs have a comparative advantage in S , while business entrepreneurs have a comparative advantage in F , implies that any equilibrium with linear technologies must lie along a line connecting the corner solutions for each type of agent. \square

Connecting our model to Kotchen (2006), Proposition 3.1 provides conditions under which the production of the aggregate level of \bar{S} in the economy will occur solely through pure charities, the losses of which are financed by transfers from profit-oriented businesses. In our model, this transfer is intermediated by donations from investors, but as we discuss later, it is also possible to imagine transfers that occur in the form of delegated philanthropy by managers who donate on the investors' behalf. In our simple framework, the absence of transaction costs makes this form of delegated philanthropy completely isomorphic to investor donations. In that sense, our model is silent on the comparisons that are the focus of Graff Zivin and Small (2005) and Baron (2007), because our model does not

allow us to consider crowding out of one type of charitable giving by another. It expresses simply whether one organizational form for the production of charitable output will dominate another, regardless of how it is funded.

In either case, Proposition 3.1 allows us to distinguish preference-based arguments for increasing social output from technology-based arguments for the rise in prevalence of double-bottom-line businesses or social enterprises that seek to operate with financial viability. When the conditions in Proposition 3.1 are satisfied, no profit-minded social businesses exist, and no profit-oriented company engages in CSR (except in the form of direct transfers to pure charities). Under these conditions, any increase in the equilibrium aggregate level of \bar{S} comes purely from the fact that investors choose to allocate a larger amount of their investment capital to pure charities. In such an economy, increases in \bar{S} would occur without any CSR or social entrepreneurship occurring at all.

For the production of the equilibrium level of \bar{S} to occur through the use of corporate social responsibility and/or social entrepreneurship, it must be the case that the production possibilities frontier can be expanded by moving from focused firms to hybrid organizations. We consider this possibility in the next section.

3.3 Double bottom line equilibria

When Proposition 3.1 fails to hold, this means that higher levels of \bar{S} and \bar{F} can be achieved by organizing production through hybrid, or double-bottom line organizations than through pure char-

ities and pure-profit organizations. Such businesses will not single-mindedly pursue their focal objective (social output for charitable entrepreneurs, financial output for business entrepreneurs) but rather allocate labor to both types of activities in a manner that improves social surplus relative to what could be achieved under the Friedman/Levitt rule.

Figure 3.2 illustrates a set of non-linear production possibilities for charitable and business entrepreneurs in which Proposition 3.1 fails to hold.

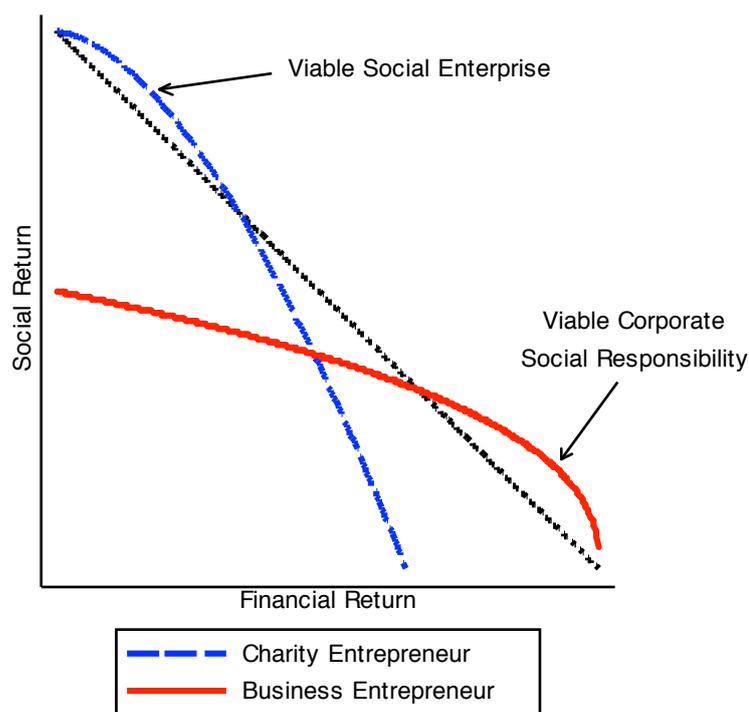


Figure 3.2: Viability of Social Business

Figure 3.2 identifies two types of hybrid organizations that improve on the allocations that are feasible under the Friedman/Levitt

condition. The first are *viable social enterprises*. These organizations are capable of producing a level of S for a given level of F that exceed what an investors can generate by trading along the Friedman/Levitt line. An investor will sacrifice Δ units of F to earn an additional unit of S , but viable social enterprises offer a more favorable tradeoff than this. The second set of organizations engage in *viable corporate social responsibility*. These organizations can sacrifice a small amount of financial return in exchange for a higher amount of social output than investors can achieve by trading along the Friedman/Levitt line.

The existence of viable hybrid organizations means that equilibria can no longer lie along the Friedman/Levitt line. The only admissible equilibria are ones that involve mixing between two hybrid entrepreneurs. We call these Double Bottom Line Equilibria, defined as follows:

Definition 3.3 (Double Bottom Line Equilibrium). A “*Double Bottom Line Equilibrium*” is an allocation of labor by each type of entrepreneur and an allocation of capital by investors with the following properties:

- *Charity-oriented entrepreneurs optimally allocate some effort towards financial output; namely, $e_C^{f*} > 0$.*
- *Business-oriented entrepreneurs optimally allocate some effort towards social output; namely, $e_B^{s*} > 0$.*
- *Investors maximize utility by allocating capital between two hybrid organizations.*

Given that Proposition 3.1 establishes necessary and sufficient conditions for focused firm equilibria, it also allows us to describe the set of parameter configurations that yield double bottom line equilibria. We summarize this with the following lemma:

Lemma 3.2. *If, for any level of effort \tilde{e} , $MRT_i(\tilde{e}) > \Delta$ for either type of entrepreneur, then all equilibria will be double bottom line equilibria.*

As can be seen in Figure 3.3, all such equilibria will lie either along the straight line connecting the Optimal Social Enterprise and the Optimal Socially Responsible Business, or else on one of the two regions involving only production from one type of entrepreneur, depending on the preferences of investors. For our purposes, we will rule out preferences that generate equilibria involving only investment in one of the two types of entrepreneurs and assume that the equilibrium lies along the line segment connecting socially responsible business and a financially savvy social enterprise.

The line that connects the optimal social enterprise to the optimal socially responsible business need not be parallel to the Friedman/Levitt line (which connects pure profit-oriented organizations with pure charities). This equilibrium tradeoff, determined not only by within-sector marginal rates of transformation between S and F but also by rates of transformation across sectors, is critical for understanding how to allocate resources between profit-making and socially oriented output. We call this SoFT, the Social/Financial Trade-

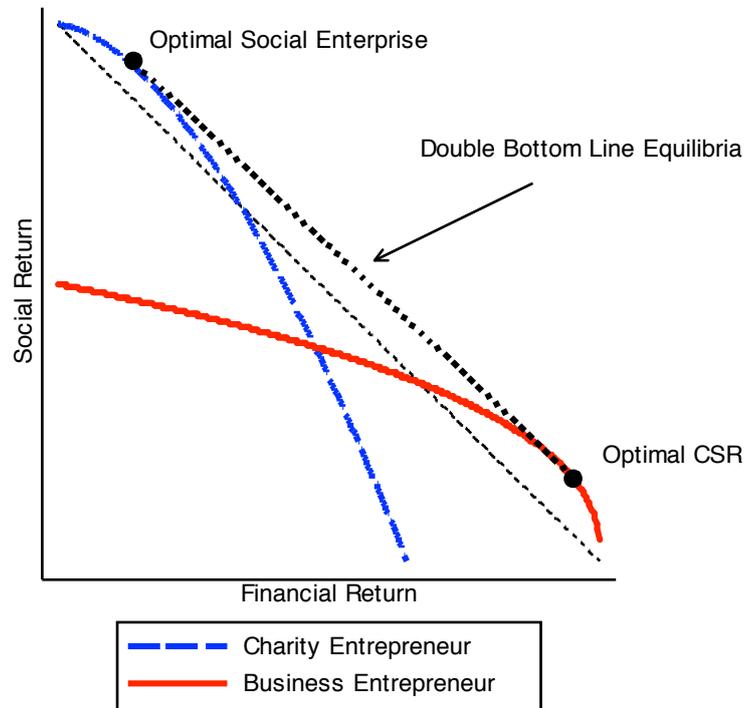


Figure 3.3: Double Bottom Line Equilibria

off, defined as follows⁵:

$$SoFT = \frac{s_C^* - s_B^*}{f_C^* - f_B^*} \tag{3.10}$$

This concept of measuring the performance of social businesses in terms of their opportunity cost has several advantages over existing practices for evaluating social investments. In particular, all existing investment theories fail to select the *Optimal Social Enterprise* as the preferred charity entrepreneur (or the *Optimal CSR Firm* as the preferred business entrepreneur) and instead lead investors to invest in

⁵In an economy characterized by Focused Firm equilibria, we will have $SoFT = \Delta$.

entrepreneurs with suboptimal labor allocations. We discuss this in detail in the next section.

4 Comparing SoFT to Prevailing Investment Rules

There is a growing trend among socially conscious investors towards considering both financial and social returns. The most commonly used policies among practitioners for evaluating investments in socially-motivated organizations are break-even conditions and SROI. In the for-profit sector, social screening has become popular as an investment policy that only invests in firms that generate a minimum level of social output. Below we show why these methods are typically suboptimal, and why SoFT offers a better way to understand the performance of social business.

4.1 Financial break-even conditions

Philanthropists and socially-motivated investors are increasingly aiming for positive financial returns in addition to positive social returns. As a result, many have started to impose a financial break-even condition on their investments. J.P. Morgan estimates that this rapidly growing market of so called *impact investing* has a potential ranging from \$400bn to nearly \$1 trillion over the next ten years (O'Donohoe et al., 2010).

Our framework offers a unique way of analyzing the rationale of this decision rule. A break-even condition requires that the charity entrepreneur generate financial output equal to or exceeding the principal amount invested, regardless of the social return generated.

Graphically, this can be depicted by a vertical line in S/F -space. Obviously, the profitability of the charity technology determines the limitations imposed by a break-even condition. Figure 3.4 shows three possible locations of such a break-even line.⁶

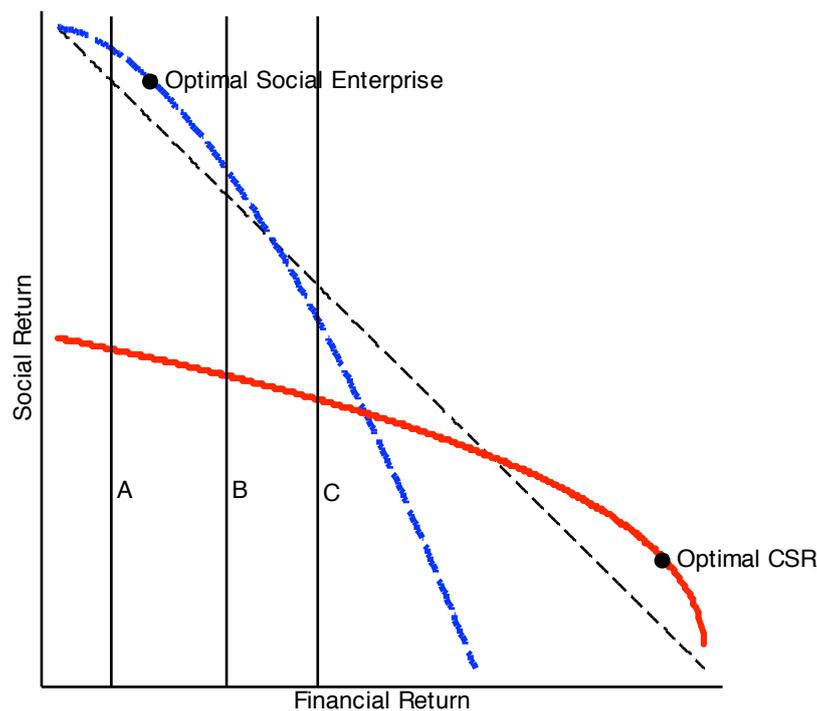


Figure 3.4: Break-Even Condition

Firms to the right of a given break-even line are considered good investments and those to the left are considered bad. Assuming that some level of social enterprise is viable, a break-even condition can yield three different results, depending where the break-even line intersects with the technology frontier.

⁶The break-even line always goes through $F_C = k_C$. What changes between the scenarios is the technology frontier due to different levels of financial profitability of the charity entrepreneur.

In scenario C, no social enterprises that break even are able to generate social returns in the same amount as what an investor can achieve through investing along the original Friedman/Levitt line. In other words, no viable social enterprises break even. Under these conditions, a break-even rule would lead to suboptimal investment decisions, since investors would always invest in social enterprises below the Friedman/Levitt line. In scenarios A and B, *some* viable social enterprises break even. In both of these scenarios, the decision rule leads to two types of errors: it falsely rejects viable firms and it falsely accepts unviable firms.

Consider scenario B. Firstly, all firms to the left of the break-even line are strictly ruled out, although some are above the Friedman/Levitt line and are viable by definition. Secondly, all firms to the right of the break-even line are acceptable according to the decision rule, even though many of them offer return combinations that are strictly dominated by the Friedman/Levitt rule. Indeed, a break-even rule could even admit charity entrepreneurs that offer social returns so low that they are dominated by business entrepreneurs (not pictured here). The difference between scenarios A and B is that in the former, the *Optimal Social Enterprise* breaks even. In scenario B, the equilibrium outcome is not included in the investors opportunity set, whereas in scenario A it is.

Figure 3.5 illustrates scenario B, in which some viable social enterprises break even, but the Optimal Social Enterprise does not. In equilibrium, investors will allocate capital between the Best Available Social Enterprise and a business entrepreneur. The optimal busi-

ness entrepreneur will in this case allocate a higher amount of labor to the S activity than the original Optimal CSR entrepreneur following the reduction in opportunity cost (SoFT). The equilibria are shown by the thickly dotted line. As can be seen, this line is dominated by the line of the double bottom line equilibria (thin dots). Furthermore, our framework gives us a way of quantifying the "social cost" to investors of imposing a break even condition: for a given level of F , the social return is reduced by an amount ranging from zero to a . The exact amount depends on the investor's utility function. The maximum possible loss, a , is found by calculating the distance from the Double Bottom Line Equilibria with $F_C = k_C$ to the social return of the Best Available Social Enterprise.⁷

The same logic applies to any other rule of thumb involving a fixed financial return. For example, a socially-conscious investor interested in generating a minimum of 5% financial return from his investment in a social enterprise risks making the same mistake as those imposing a break-even condition.

4.2 Social screening

There are various ways for investors in for-profit companies to incorporate social values into their investment decisions. Screening, i.e. avoiding companies that do not meet a minimum level of social return, is a subset of the wider practice of socially responsible investing (SRI), which also includes shareholder advocacy. The SRI market has grown tremendously over the last decade and amounts

⁷The corresponding financial loss for a given level of social return is calculated analogously.

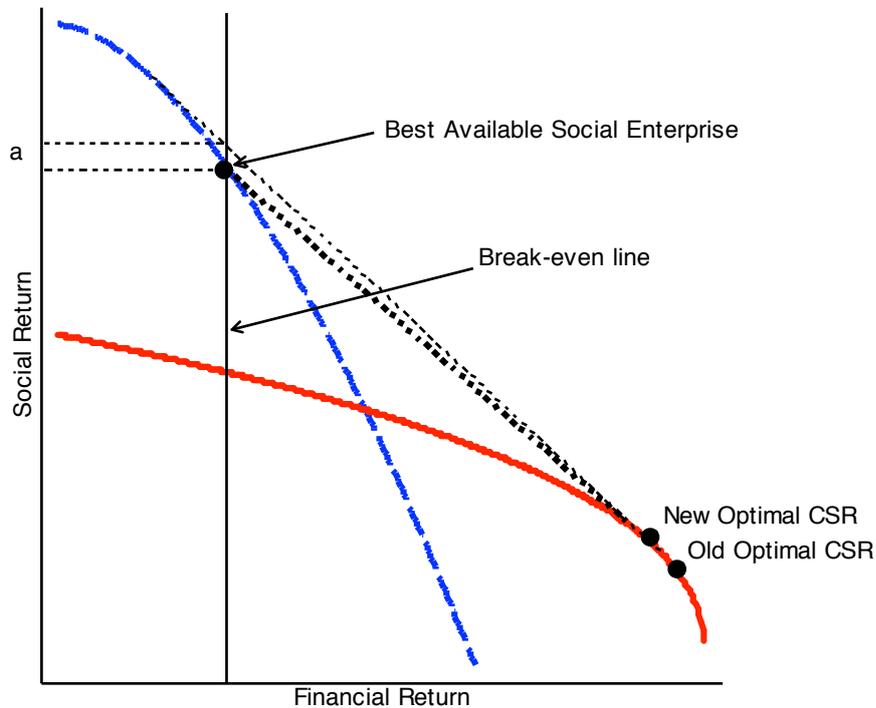


Figure 3.5: Cost of Break-Even Condition

to approximately \$7 trillion (Freireich and Fulton, 2009). There is a large body of empirical work that attempts to quantify the effects of socially responsible investing on financial performance in general (e.g. Margolis et al. (2007)) and screening in particular (e.g. Diltz (1995), Geczy et al. (2005) and Hong and Kacperczyk (2009)).

In the context of our model, screening can be seen as the social analogue of a financial break-even condition: investors impose a threshold above which all investments must lie. This can be thought of as a horizontal line in S/F -space, S_{\min} (see Figure 3.6). This practice will most likely lead to suboptimal investment decisions for exactly the same reasons as break-even conditions. Firstly, an entrepreneur with

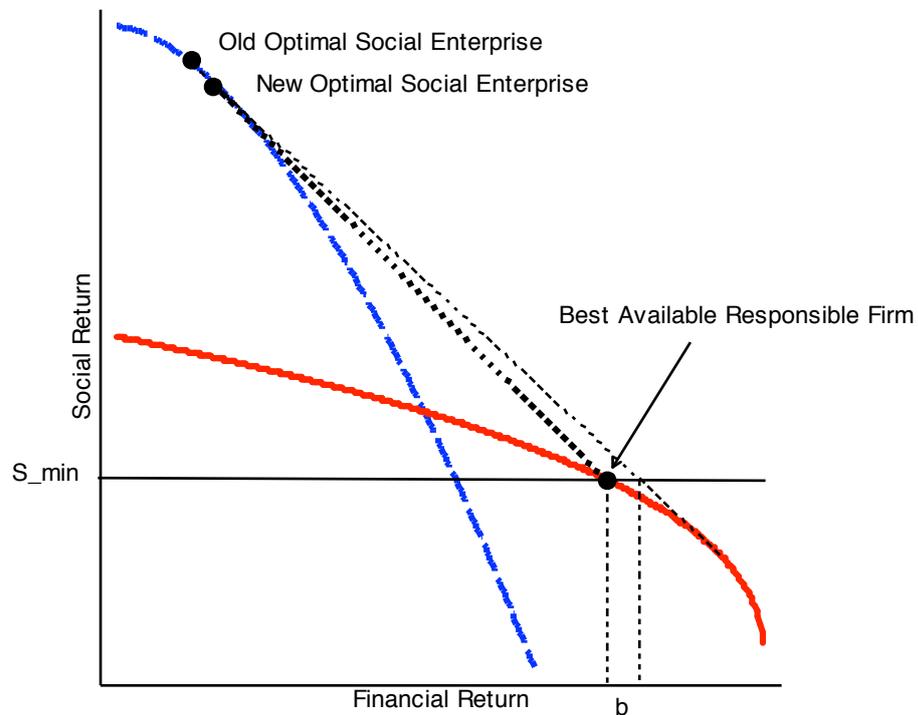


Figure 3.6: Cost of Social Screening

the optimal labor allocation may be excluded. Secondly, screening makes both Type I and Type II errors; it excludes viable CSR firms and includes unviable CSR firms. Analogously to Figure 3.5, the financial cost of imposing screening (for a given level of social return) will be in the range from 0 to b .

4.3 Social Return on Investment

SROI is a widely used method for evaluating investments in social sector organizations that integrates both the social and financial returns to a social activity (Emerson et al., 2001). The SROI for a charity entrepreneur is found by adding a monetized value of its social

output to its financial output and then dividing this sum with the size of the investment. Obviously, operationalizing SROI requires taking a stand on how to monetize social output, but the higher the SROI, the more attractive the investment.

In general, SROI will generate sub-optimal investment decisions unless the monetization function exactly coincides with SoFT. To see this, let α denote the exogenously determined dollar value of one unit of social output. Then we can write the objective of SROI as

$$\max_{e_C^S} \alpha s_C(e_C^S) + f_C(1 - e_C^S) \quad (3.11)$$

(This makes use of the fact that the investment size k_C drops out of the expression because $S_i = s_i(e)k_i$ and $F_i = f_i(e)k_i$ for both B and C entrepreneurs.) The first-order condition for this maximization problem yields a critical value of social effort, denoted by \hat{e} , that sets the optimal marginal rate of transformation equal to $-\frac{1}{\alpha}$:

$$MRT_C = \frac{s'_C(\hat{e})}{f'_C(1 - \hat{e})} = -\frac{1}{\alpha} \quad (3.12)$$

In general, this will not coincide with an equilibrium in the model sketched in Section 3, unless the exogenously specified α just happens to be such that $SoFT = -\frac{1}{\alpha}$, i.e. the slope of the line connecting optimal social enterprises and optimal corporate social responsibility.

Indeed, the advantage of SoFT over the SROI method is that SoFT does not rely on an exogenous monetization function for social output. Instead, SoFT offers the endogenously determined monetiza-

tion function by considering the optimal trade-offs of both sectors. The intuition is that the opportunity cost generated by SoFT is stipulated by the market for social and financial returns and rational investors will take this market-driven opportunity cost and apply it to any entrepreneur looking for capital. As a consequence, the SoFT method identifies the optimal investment strategy for *all* types of investors, recognizing that the shadow price of an additional unit of corporate social responsibility is given by the opportunity cost of optimal social enterprise, and vice versa.

5 Extensions

In this section we consider three brief extensions to the basic model. Ultimately, each of these extensions builds on providing more elaborate micro-foundations for the functions s_i and f_i that capture the within-sector tradeoffs faced by each type of entrepreneur. First we discuss the role of government policy in shaping s_i and f_i . Then we consider how to interpret s_i and f_i for a given activity based on complementarities in the underlying production process. Finally, we consider an interpretation that explores strategic alliances between business and charity entrepreneurs as an alternative to the allocative role played by investors in our basic model.

5.1 A role for government policy

In our analysis thus far, the equilibrium outcome is always Pareto efficient, because we have assumed that S is not a public good in the traditional sense. This is a convenient simplification, because we are

not concerned with comparing the equilibrium level of S under a decentralized economy to what a social planner would prescribe. Nevertheless, it is still natural to ask how government policy might affect the tradeoff between social and financial output, how government intervention might affect the equilibrium level of S and F produced in the economy.

Government action can be introduced into our model in two simple ways. The first echoes the analysis offered in the preceding section. Namely, government could set a legal or regulatory framework that placed a floor on S_B (the amount of S that businesses produced). As the preceding analysis shows, the best this could do in terms of effecting welfare is to mimic the decentralized outcome, and in general this will result in welfare-destroying distortions of S and F . This is for precisely the same reasons as outlined above.

A less obvious role for government policy to affect the equilibrium in this model is through its effect on the tradeoff between s_i and f_i . Because f_B is a reduced-form measure of the financial profit that business creates, it subsumes the net effects of different tax policies towards business. By shaping tax policy, governments can shape the equilibrium tradeoff between S and F through their policies' effects on the marginal rate of transformation between S and F in each sector.

Consider, for example, a government that sought to improve domestic, inner-city labor force participation. In such a model, S is presumably inner-city employment, and a charity entrepreneur C might be an agent engaged in work-force education programs. Busi-

ness entrepreneurs might face the possibility of producing overseas at low wages and high transportation costs, or domestically at high wages and low transportation costs. In this example, stimulating local hiring through an investment tax credit aimed at setting up a local factory would expand the production possibility frontier for business entrepreneurs, flattening the marginal rate of transformation between financial and social output, and thus leading to a higher point of tangency in Figure 3.3 for the optimal amount of CSR.

Of course, the fact that lowering the cost of domestic production weakly increases domestic production is clear from first principles. What our analysis illustrates is that it affects the equilibrium amount of social entrepreneurship in the economy. In our example, it would cause the optimal social enterprise to be focused more on the provision of social output and less on financial output. Therefore, the net effect of the government policy would be to increase the amount of S provided by business entrepreneurs, but also tilt charitable output more towards loss-making charities, away from charities that generated lower amounts of S but with stronger financial output.

5.2 Complementarities in the production process

A comparison of Figures 3.1 and 3.2 suggests that the optimal social cause addressed through corporate social responsibility initiatives are the ones that have the strongest production complementarities between the S and the F activities. Thus, shoe manufacturers are better suited to address child labor initiatives than they are supporting urban education initiatives in poverty-stricken US inner cities,

not because one is intrinsically more or less socially valuable than the other, but because the manufacturing technology has little or no spillover effects for educating urban children. One mechanism for such complementarity is information asymmetry. For example, the manager of a shoe factory in Vietnam is likely to have better information about child labor conditions in the country than outsiders. Thus, a key normative prescription from our analysis is that corporate social responsibility is best directed at those causes which are most directly impacted by the normal operations of business. This concept of complementarity has also been discussed by Besley and Ghatak (2007), which finds that in the case of remediating “bads”, firms are often better positioned than nonprofits, since the corporation may itself be the perpetrator of the “bad”.

Likewise, a complementary prescription arises for the types of revenue generating activities of a social organization. Commercial activities should be selected in such a way that they are strategically aligned with the social mission. This has been noted by Weisbrod (1998), who argues that commercialization of nonprofits brings financial “interdependencies”, both positive and negative.

Similar to our analysis of government policy in the preceding subsection, another implication that arises from this analysis is that the technology frontier of the business technology has a direct impact on the optimal level of commercialism in the social sector. To see how, imagine that an innovation occurs in the business sector, which causes the maximum value of profits to jump from F_B^{max} to $1.2 \times F_B^{max}$. All else equal, this flattens the slope of the Friedman/Levitt

line, which in turn reduces the social opportunity cost, ie. SoFT. As a consequence, this innovation will have a negative effect on the scope for viable social enterprises as well as the optimal labor allocation by charity entrepreneurs. Thus, the opportunity cost of social business connects changes in socially responsible business practice to social enterprises as well as broader forces in the economy.

5.3 Strategic CSR

Our model can also be extended to examine cross-funding between business firms and organizations in the social sector. To illustrate this idea, consider a business entrepreneur who is given the option of transferring a portion of her capital input to a charity entrepreneur. In the case of "pure" entrepreneurs, this example corresponds to corporate philanthropy, whereby the business entrepreneur simply shifts financial resources away from its own production technology towards that of the charity entrepreneur. The business entrepreneur has simply moved its return combination along the Friedman/Levitt line. She has not done anything investors could not do on their own and will therefore face the criticism of Friedman-inspired investors.

Next, assume the business entrepreneur has superior information about the technology of the charity entrepreneur. This could, for example, happen if both types of entrepreneurs are in the same industry using similar production technologies that are costly for the investor to learn about. The result is a return combination of the firm that improves upon the equilibrium. Strategic CSR is an area in which social financial intermediaries play an important role (see

Robinson (2010)).

6 Conclusion

This paper develops a simple economic model that is designed to provide a unified account of the tradeoffs that firms and society face in terms of social versus financial returns. The answer to the question, "What is the proper scope of the profit-making firm?" can be analyzed in this framework by asking how the opportunity cost, measured as a firm's foregone social return per unit of additional financial return, affects its attractiveness as an investment opportunity.

The central lesson that emerges from our analysis is that the market-based tradeoff between social returns and financial returns provides a common opportunity cost for social enterprises and corporate sustainability initiatives alike. We refer to this opportunity cost as *SoFT*: the social/financial tradeoff. It captures the fact that the relevant tradeoffs that society faces when considering investment in a social enterprise may involve not just a comparison with other, closely related social entrepreneurs, but also to alternative organizational forms that achieve similar social output with different financial resources. The opportunity cost may differ across industry sectors, but will always be determined by the market equilibrium rate of exchange between different types of social and financial ventures that affect the magnitude of the each type of social problem. Simple rules of thumb like break-even conditions for social enterprises almost never coincide with the optimal level of social returns, because these conditions rule out enterprises that make modest losses but of-

fer attractive social returns. Likewise, social hurdle rates for profit-making enterprises are also tenuous policy instruments, for analogous reasons.

Clearly more work is needed before SoFT can be put to work at a practical level. At the conceptual level, we have glossed over contracting issues between capital providers and managers in our analysis of the within-technology tradeoffs that corporations and mission-driven organizations face. We have also avoided the critical issue of measurement of social returns. We hope our analysis will spawn future work in these areas.

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