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THE DETERMINANTS OF PRIVATE CONTRIBUTIONS AND
GOVERNMENT GRANTS TO NONPROFIT ORGANIZATIONS

BY
AMANDA LORI WILSKER

A Dissertation Submitted in Partial Fulfillment
of the Requirements for the Degree
of
Doctor of Philosophy
in the
Andrew Young School of Policy Studies
Of
Georgia State University

GEORGIA STATE UNIVERSITY
2011

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ACCEPTANCE

This dissertation was prepared under the direction of the candidate's Dissertation Committee. It has been approved and accepted by all members of that committee, and it has been accepted in partial fulfillment of the requirements for the degree of Doctor of Philosophy in Economics in the Andrew Young School of Policy Studies of Georgia State University.

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Abstract

THE DETERMINANTS OF PRIVATE CONTRIBUTIONS AND GOVERNMENT GRANTS TO NONPROFIT ORGANIZATIONS

By

AMANDA LORI WILSKER

AUGUST 2011

Committee Chair: Dr. Dennis R. Young

Major Department: Economics

The nonprofit sector is becoming increasingly important to the U.S. economy both as an employer and service provider. Although most of the sector's revenues are earned, the ability of the nonprofit sector to generate significant levels of unearned income in the form of grants and contributions reinforces the sector's uniqueness. This dissertation uses the NCCS-GuideStar data to address questions pertaining to the determinants of nonprofits' contributions and government grants. Each of the essays' findings is discussed briefly below.

The first chapter examines the relationship between an organization's finances and the level of government grants received. Because organizations choose to apply for government grants, a Heckman procedure is coupled with fixed effects to produce unbiased, within organization estimates. When controlling for the probability an organization receives grant funding, the average level of grants an organization receives generally increases with improvements in efficiency measures. In testing Brooks' (2004) adjusted performance measure, the author finds that for many categories of nonprofit organizations, improvements in performance relative to community expectations increase grants for recipients, but better performance reduces the probability an organization receives any government grants.

The second essay examines the determinants of direct support to organizations in four of the major categories, namely Arts, Education, Health, and Human Services, using instrumental and panel techniques. Unlike government grants, changes in price do not affect organizations' expected contributions. When significant, government grants generally crowd out private donations while the effects of program service revenue vary by category and specification.

The final essay examines the effects of nonprofit expenses and revenues on direct support for organizations in four small subcategories, Disaster Preparedness, International Aid, Environmental Conservation, and Performing Arts. The essay tests whether the impact of various revenue and expense variables on direct support changes around an unexpected event such as 9/11. Results suggest that the events of 9/11 had a greater moderating effect for categories losing funding compared to categories that received a windfall of contributions.

Introduction

For two consecutive weeks in April, 60 Minutes featured both the best and worst of the nonprofit sector. On April 17th, 2011, the CBS news show aired a story about Greg Mortenson, best-selling author and executive director of the Central Asia Institute. The story raised concerns over excessive benefits for Mortenson and the intentional misleading of donors. Since airing, the Montana Attorney General announced he is investigating Mortenson and his charity. One week later, on April 24th, the same news program featured Eli Broad, a philanthropist intent on giving away the majority of his multi-billion dollar fortune. Supportive of the arts, medical and scientific research, and public education, the worst Broad's critics can say is that he micromanages each of his contributions to ensure that they are used properly by the recipient organization. He considers his contributions as investments and expects tangible returns.

These two stories demonstrate America's love/hate relationship with the nonprofit sector. We look to the nonprofit sector as a savior at times, able to solve problems created or exacerbated by public and private sector failures. At other times, we criticize the nonprofit sector as inefficient and assume that without the profit-maximizing objective of for-profit firms, the nonprofit sector maximizes directors' or board members' objectives that may not align with the organizations' stated missions.

Whether we believe in the nonprofit sector's ability to fill a void in society or are simply acting on our need to "do good," many American's contribute to nonprofit organizations. Our government, too, provides grants and extends contracts to organizations that are constrained in their ability to redistribute profits. Current economic conditions and

changing political tides threaten government support to many nonprofits including staples in public media such as National Public Radio (NPR) and Public Broadcasting Station (PBS).

Few nonprofits, philanthropists, and directors receive the media attention recently given to the examples above, and yet a significant proportion of nonprofit organizations are dependent on contributions and government grants. At the organizational level, little research examines the determinants of government grants received by a nonprofit. More research exists on determinants of private contributions, but research is generally divided into two camps. In the three essays that follow, each of these issues is addressed.

In the first chapter, the author analyzes organizational factors that affect the level of government grants received by a nonprofit organization. Recognizing that organizations choose to apply for government grants, the author applies a Heckman methodology that accounts for self-selection. While the results suggest that government grants are dependent on previous year's allocation of expenses, the most interesting finding may come from an adaptation of Brooks' Adjusted Performance Measure. Organizations spending more on program expenses are less likely to receive grants, but conditional on receiving grants, more efficient organizations receive more money from the government. These results suggest that governments are selecting the most efficient organizations from a pool that does not represent the best of the nonprofit sector.

The second essay merges empirical advances in the estimation of crowding out of private contributions by government grants with research on the effects of financial proxies for efficiency on direct support. In addition to efficiency measures and government grants, the effect of program service revenues on contributions is also considered. Analysis was restricted to four of the five major categories, and relationships were estimated using a

variety of panel and instrumental techniques. When government grants significantly affected contributions, the relationship was negative, supporting crowding-out hypotheses. The sign and significance of program service revenues varied considerably across categories, and interestingly, the financial proxy for efficiency lacked significance.

Further disaggregation of categories occurs in the third essay in which Disaster Preparedness and Relief organizations are compared with Performing Arts, Environmental Conservation, and International Aid. Although still interested in the effects of government grants, efficiency, and program service revenues on direct support, this essay seeks to determine whether the effects are moderated as people respond to tragedies such as 9/11. Surprisingly, greater moderation occurs for organizations that are losing funding such as the Performing Arts than for industries receiving large influxes of money.

While governments respond to improvements in an organization's efficiency, private donors are less concerned with efficiency and more concerned with other revenue streams, including government grants and program service revenue. In all three essays, we find evidence of significant differences between categories and groups of nonprofits, suggesting that further research may benefit from closer examination of more homogeneous groups of nonprofit organizations.

Each essay offers new insight into specific revenue streams for nonprofit organizations, but with each answer, new questions arise. Addressing some questions requires the collection of new data. Existing data provide information on grant recipients but not applicants, for example. Other issues may be addressed with different empirical techniques. For example, it might be interesting to compare the results in the second essay to those generated by a generalized method of moments technique. Finally, changing the unit

of analysis from the organization to the sector may offer even more information on the determinants of direct support and government grants.

Additional research in these areas is both encouraged and expected, but further improvements do not diminish the importance of the research within this dissertation. From a researcher's perspective, developments in this dissertation highlight the need for understanding changes over time and including several revenue and expenses categories in the prediction of government grants and direct support. For nonprofits, findings promote the importance of understanding the differential impacts of determinants across categories and over time. While the goal of a nonprofit should not be to maximize grants or contributions, for many nonprofits, their work never ends. The need for greater revenues to meet growing service demands underlines the importance of understanding the determinants of both private contributions and government grants. Finally, for current and prospective donors, the research says a lot about those factors that affect aggregated contributions at the organizational level. Perhaps we should all take our cues from Eli Broad, the Californian philanthropist, and expect returns or outcomes from our charitable contributions. Understanding current behavior is necessary before we can change behavior, and both may be necessary to build a more efficient and effective nonprofit sector.

Why Government Gives: The Effects of Efficiency Proxies on Government Grants to NPOs

The public sector provides a nontrivial source of financing to nonprofit organizations directly in the form of grants, contracts, and fees for services and indirectly as tax deductions, credits, and payments to individuals that ultimately flow to nonprofits (Bowman & Fremont-Smith, 2006). Prior to 1960, public support of nonprofit organizations constituted a small share of nonprofit revenues and was largely confined to select nonprofits (Smith, 2006). The last five decades, however, produced radical changes in the relationship between the nonprofit and public sectors, with 29% of nonprofit revenues now coming directly from the government (Blackwood, Wing, & Pollak, 2008). Considering that the nonprofit sector accounts for a minimum of 5% of GDP (Sherlock & Gravelle, 2009), government support of nonprofits accounts for more than 1.4 percent of the United States' economy.

Despite the importance of the government-nonprofit relationship, relatively little research examines the determinants of government funding, specifically government grants that constitute approximately one third of direct public support. Instead, economists traditionally focus on crowding out-the displacement of private contributions following government funding (Andreoni & Payne, 2003; R. Steinberg, 1991)-and the determinants of private contributions including financial proxies for efficiency (Tinkelman, 1999; Tinkelman & Mankaney, 2007; Weisbrod & Dominguez, 1986). While understanding the response of donors to government funding and efficiency proxies is important, multiple parties have a vested interest in understanding those factors that affect the receipt of government grants.

There are reasons to believe that the public sector reacts differently to changes in nonprofit organizations' behaviors than private donors. Nonprofit organizations control their

expense allocations, and to the extent that expenses affect revenues (Fischer, Wilsker, & Young, 2010), the organizations also have considerable control over their revenue streams. In estimating private contributions, researchers and watchdog agencies often use expense allocations to calculate measures intended to capture a nonprofit organization's efficiency. Theoretically, private donors are expected to increase contributions as organizations become more efficient. Empirically, however, the relationship is ambiguous. Results vary in both the magnitude and direction (Bowman, 2006; Khanna, Posnett, & Sandler, 1995; Okten & Weisbrod, 2000; Parsons, 2003; Tinkelman, 2004; Weisbrod & Dominguez, 1986), perhaps a result of donors' lack of information on nonprofit financing (Horne, Johnson, & Van Slyke, 2005). Presumably, the government has a greater stake in ensuring efficient use of taxpayers' money, with more resources to research an organization before awarding funding and monitor organizations after.

It is conceivable that the government is more responsive to changes in financial proxies for efficiency than private donors, but before we can make such an argument, empirical testing is necessary. This essay estimates the relationship between financial proxies for efficiency and government grants while controlling for organizational fixed effects and selection into the pool of grant applicants/recipients. The author begins with a review of the relevant literature, discussing first the relationship between the public and private sectors and then financial proxies for efficiency. Then, hypotheses and a description of the data used in the subsequent analysis are presented. Results from a series of regressions are presented and analyzed. Finally, the author concludes with a brief summary of the findings and implications for public policy.

Before we begin with the crux of this paper, however, let us first define government grants. Government grants are reported on line 1e of the Form 990 filed by nonprofit organizations. According to directions for filing Form 990, a grant is a payment from a governmental unit and is reported “if its primary purpose is to enable the organization to provide a service to, or maintain a facility for, the direct benefit of the public rather than to serve the direct and immediate needs of the governmental unit.” Generally speaking, grants are defined as payments that further the grantees’ missions, while contracts primarily benefit the payee.

The distinction between government grants and contracts is often blurry because of the striking similarities. For each, the government must issue some type of request for proposals, and responses are evaluated on a competitive basis. Grants, however, are generally not provided to private, for-profit agencies, and are “designed to accomplish a public purpose, ... address a public problem, or stimulate a particular activity,” (Flood, 2002). Contracts are more specific in their terms and conditions, more heavily regulated, and most importantly, designed to acquire goods and services with a premium placed on delivery of the good or acceptable performance (Flood, 2002).

The remainder of this paper focuses on government grants, thus relying on accurate reporting by the nonprofit organization and appropriate classification of funding by the government as grants as opposed to contracts.

Bureaucratic Theory and Nonprofit Grants

Prior to examining the documented relationship between the public and nonprofit sectors, let us first establish a brief model for the government agencies making the grants. There are two parts of government, the politicians—likely determining the size of budgets

and/or the amount of budgets allocated to grants—and the bureaucrats responsible for awarding grants, selecting grantees, and monitoring usage of the grants by recipients.

With respect to politicians, two sets of literature offer potentially valuable insight. First, the median voter theorem postulates that in order to win an election, a politician must express views consistent with the median voter. In theory, the model works in a two candidate race when voters' preferences can be represented along a single dimension. According to such a theory, politicians' positions, and later government expenditures on public goods, are viewed as an expression of the preferences of the median voter. Nonprofits enter the scene because, like the government, the sector provides goods often collective in nature or ones that the private sector cannot produce profitably. For this reason, Weisbrod (1964) argues, social welfare is increased by subsidizing the nonprofit sector (Weisbrod, 1964), providing justification for contributions and perhaps making the first theoretical argument for government grants to nonprofits.

The problem, however, is that many studies fail to find expenditure decisions that are consistent with the median voter theorem (Romer & Rosenthal, 1979). As Romer and Rosenthal (1979) suggest, expenditures are often in excess of those desired by the median voter, suggesting either a multiplier between median voter preferences and actual expenditures or the possession of significant bargaining power by agency bureaucrats. Other problems reside with the representatives we elect to represent us. Politicians may engage in log-rolling, or the trading of their votes on current issues for supporting votes on policy they and their constituents desire. Particularly in the case of expenditures, one can see that parties tend to support one another in cases when their own constituents may not benefit in exchange

for their party's support on bills where their own regions benefit economically (Buchanan & Tullock, 1965).

Temporarily ignoring the ability of the median voter theorem to connect political preferences to overall expenditures, we can still draw general conclusions between the theorem and grants to nonprofit organizations. In deciding what types of nonprofits to award money and the level of funding earmarked for specific industries, politicians are likely to consider the values and preferences of their constituents. For example, in view of their constituents' preferences, politicians determine the level of services publically provided relative to those funded by the government but provided by nonprofit organizations. The median voter may also determine how much funding, if any, is awarded in grants to the Arts, Environment, or Human Services, to name a few nonprofit industries. Finally, politicians are likely to award grants to the most deserving nonprofits if the median voter is concerned with organizational efficiency. Of course, the last part of this hypothesis fails to hold if voters base preferences on organization reputation rather than efficiency, as the two may not be correlated.

Also relevant to the discussion are the determinants of intergovernmental grants, the closest public expenditures to government grants of nonprofits. While little if any research exists on public funding of nonprofits, a substantial body of research on intergovernmental grants may provide additional insight. Factors such as the similarity in political party between officials in the sending and receiving government units positively affects grants per capita (Grossman, 1994). States with a higher proportion of Democrats in the state legislature also receive more federal funding. Other studies have documented that greater per capita grants flow to areas with more swing voters (Johansson, 2003). In this

sense, intergovernmental grants become political tools. Grants to nonprofits may fill a similar purpose. Government officials may make grants to nonprofit organizations that appeal to voters with particular preferences, hoping that the inflow of funds or designations for specific purposes will increase support for the politicians' candidacy.

Although a handful of grants to nonprofit organizations may come directly from political proceedings, often times, money is allotted generally to specific causes or purposes, and it is the duty of the bureaucrats to divide the pool of funds, award specific grants, and monitor recipients. Niskanen (1968) provided a cornerstone of public choice literature, describing the ways in which a bureaucracy desiring to maximize its budget can produce at a level and grow at a rate significantly higher than that expected of a competitive market facing the same conditions. This result arises when the bureaucracy is assumed to be an agent with monopoly power both over the buyer of services (government) and service provision (Niskanen, 1968). Contrary to Niskanen's view of a perpetually increasing bureaucracy, Breton and Wintrobe (1975) conclude that the budget maximizing preference is constrained by the fact that increases in size – particularly in the number of employees- diminishes a managers control over the agency. Thus, there is some point at which an increase in budget is no longer optimal (Breton & Wintrobe, 1975).

The above theories were established to explain bureaucratic behavior, but extension to the government's grant making behavior is not unreasonable. Through grants, an agency can increase the provision of services indirectly, thus reducing the trade-off between budget increases and managers' control over the agency. In other words, the optimal size of a bureaucracy, while still subject to the criticism of Breton and Wintrobe (1975), increases beyond that anticipated if all service provision is provided directly by a public agency.

Discussion and development of the bureaucratic literature is important but may be outside the scope of this particular paper. For example, how politicians and bureaucrats decide the proportion of the budget earmarked for grants is left for future research. Here, we assume that the granting agency or bureaucrat is a rational actor, and whether motivated by self or public interests, has reasons to allocate designated grant funds to the more efficient nonprofit applicants. From a public interest perspective, such allocations increase social welfare more than the awarding of grants to less efficient organizations. For bureaucrats motivated by pure self-interest and the desire to advance professionally, the need to demonstrate a clean, positive track record may include the awarding of grants to exceptional nonprofit organizations. Although constrained by the availability of grant funds, the number of grants they can award, the applicant pool, and the time they can spend reviewing each application and monitoring each recipient, it remains in the bureaucrats' best interest to objectively award funding. Again, formal development of the theory is beyond the scope of this dissertation, but such theory does suggest that we should observe a positive relationship between grants awarded and nonprofit efficiency.

If we accept the notion that bureaucratic agents are rational and are interested in funding the most efficient nonprofit organizations, then we may incorporate our knowledge of individual donors and how they value efficiency. The next section describes the relationship between the public and nonprofit sectors and then provides reasons why the determinants of government grants may be similar and different to the determinants of private contributions.

Government and Nonprofit Sector Interactions

As a public expenditure, grants to nonprofit organizations represent a unique relationship between the public and nonprofit sectors. Theories on the origins of the nonprofit sector suggest it developed (at least in part) as a result of the public sector's failure to provide adequate services, suggesting a supplemental relationship. Grants, however, are more like outsourcing; the public sector pays for services provided by the nonprofits. This source of funding, therefore, implies a complementary relationship between the public sector and grant recipients (Young, 2000, 2006).

The relationship between the nonprofit and public sectors is occasionally explored (Smith & Gronbjerg, 2006; Young, 2000, 2006), but economists displayed greater interest in understanding how the actions of the government affected private contributions, both in regards to crowding out and changes in marginal tax rates (Andreoni & Payne, 2003; Dokko, 2008; Handy & Webb, 2003; Harrison & Laincz, 2010; Kingma, 1989; Marudas & Jacobs, 2004; Okten & Weisbrod, 2000; Payne, 1998; Smith, 2006; R. Steinberg, 1991; Weisbrod & Dominguez, 1986). Estimates of crowding-out, for example, vary considerably across studies (Tinkelman, 2010), possibly explained by asymmetric information between nonprofits and donors (Horne, et al., 2005).

Information asymmetry between private donors and nonprofit organizations is not surprising given the costs of researching an organization (i.e. time) (Buchheit & Parsons, 2006) and the relatively small dollar amount of most households' donations (The Center on Philanthropy at Indiana University, 2010). The average donation is approximately \$172, but the median is only \$50. Roughly two-thirds of all donations are less than or equal to \$100 (The Center on Philanthropy at Indiana University, 2007). This stands in stark contrast to

government grants to the nonprofit sector. Conditional on having received (and properly reported) government grants, the median and average values between 1998 and 2003 were \$138,000 and more than one million dollars, respectively. Although the data do not allow us to determine the number of separate grants an organization receives or whether some grants are multi-year awards, we can assume that the typical grant is much larger than the average donation.

With large sums of money at stake, government agencies should engage in more thorough background checks than most donors. It can even be argued that their search costs are lower. Nonprofit organizations must apply for government grants, providing financial statements and clear descriptions of how the organization intends to use the resources. Bureaucrats do not make decisions on a case-by-case basis but more likely select the best candidates from a pool of applicants. After a grant is awarded, most government agencies continue to monitor recipient organizations to ensure proper usage of funds (Smith, 2006). We expect more thorough oversight from the government since public officials have more to lose than a head of household following a poor allocation of resources.

If government agencies more thoroughly investigate grant recipients, then we might expect more systematic relationships between efficiency proxies and the level of grants awarded. Marudas and Jacobs (2009) provide what may be the only existing study of the determinants of government funding at the organizational level. Their sole measure of efficiency was price (or the necessary contribution to increase program expenses by one dollar), and the authors used only two years of data from the Statistics of Income dataset. By including the necessary lagged values for certain variables, the authors are left with only one observation for each organization, unable to account for organizational fixed effects.

Marudas and Jacobs (2009) find that a one percent increase in the price reduces expected government grants by 1.1 percent but acknowledge empirical and theoretical flaws with their model. Their work nonetheless provides a starting point for what should be an important line of research.

Financial Proxies for Efficiency

While public sector contributions and their relationship to financial proxies for efficiency are understudied, a considerable amount of research explores the relationship between these proxies and private contributions. Popular measures include shares of expenses allocated to programs, administration, or fundraising (Bowman, 2006; Jacobs & Marudas, 2009; Tinkelman & Mankaney, 2007), the price of increasing program expenses by one dollar (Okten & Weisbrod, 2000; Tinkelman, 2004), and financial information such as revenue diversification and net assets (Chang & Tuckman, 1991). Untested measures of nonprofit efficiency include those used by watchdog and rating agencies such as fundraising effectiveness (Charity Navigator, 2010), Steinberg's (1986) marginal donative product (R. Steinberg, 1986a), and Brooks' (2004) Adjusted Performance Measures (Brooks, 2004).

Parsons (2003) provides one of the more recent reviews of this literature. After presenting arguments for and against a uniform standard of accounting for nonprofit organizations, she cites the lack of output measures (or success at accomplishing mission) as the primary reason why scholars cannot decisively assess nonprofit efficiency. As a result, we are forced to look at inputs when evaluating the effects of efficiency for large numbers of organizations (Parsons, 2003). In a small field experiment, for example, Khumawala and Gordon (1997) conclude that donors are more interested in the expense allocations of organizations than complex figures reported on the financial statements, although these are

second to information organizations provide on their missions, activities, and accomplishments (Khumawala & Gordon, 1997). A more recent experimental approach concluded that potential donors viewed organizations that provided financial information more favorably than organizations that did not, but this view did not result in increased donations. In the second part of the same study, donors that selected to view financial information rewarded organizations that allocated a greater share of resources towards program expenses with larger donations (Buchheit & Parsons, 2006).

In another field experiment, Bowman (2006) tracks employee contributions to workplace giving campaigns, where potential contributors are provided with information on an organization's expenditures. Stemming from (R. Steinberg, 1986b)'s and Brooks' (2004; 2006) arguments that expense shares fail to capture the efficiency with which an additional donation will be used, Bowman (2006) tests the sensitivity of donations to changes in overhead ratios. While increases in overhead expenses are associated with declines in contributions, Bowman determines that other factors are more important in determining the level of contributions.

Although not explicitly provided, donors are occasionally presented with information that they could use to deduct price – equal to the amount needed to increase program expenses by one dollar. Okten and Weisbrod (2000), for example, conclude that increases in the price of giving consistently reduce contributions, thereby reducing the positive, direct effect of fundraising on total contributions. Panel data techniques, however, sometimes reveal the insignificance of price once we account for unobservable, time-invariant characteristics (Khanna, et al., 1995).

The financial health of an organization may be of interest to donors, but as a recent study by Hope Consultants (2010) and research by (Buchheit & Parsons, 2006) concluded, donors are not as responsive to changes in (or levels of) financial health indicators as theory predicts. Lack of significance may indicate multiple actions that cancel out one other. For example, some donors reward financial prudence while others question the usefulness of their donation if the organization appears to save rather than spend significant portions of revenues (Handy & Webb, 2003). When one of these two actions prevails, it appears to be the latter with increases in assets negatively affecting contributions, *ceteris paribus* (Marudas, 2004). A more likely possibility is that donors lack sufficient knowledge about nonprofit finances (Horne, et al., 2005) for changes in financial health to have any discernable impact on contributions. As mentioned earlier, the government may be more inclined to review financial information, but as is the case with private contributors, their response to organizations that maintain sufficient reserves may not be favorable. In fact, Marudas and Jacobs (2009) find a negative relationship between wealth (defined as net assets divided by non-fundraising expenses) and government support, although their empirical techniques may have biased results.

Brooks (2004) suggests that donors may be less responsive to the actual values of efficiency proxies than they are to nonprofits' relative performance. Governments, particularly those at local levels, should be familiar with the success of individual organizations – giving credibility to those scholars suggesting that government grants signal quality to potential donors (Khanna & Sandler, 2000). Applicable to this paper, however, is the idea that governments have an idea of what is expected from nonprofits and reward those that perform better than other nonprofits in the community.

The next part of the paper begins to build an empirical model explaining the relationship between nonprofit financial characteristics and the level of government grants received.

Empirical Model and Data

Marudas and Jacobs (2009) propose the first such model using organizational characteristics to predict levels of government grant funding. Despite recognizing the need for panel techniques in prior publications (Marudas & Jacobs, 2004), the scholars only have two years worth of data, and the need for lagged variables eliminates the possibility of controlling for organizational fixed effects. The authors also exclude observations reporting zero government grants. The problem is that organizations receiving grants are not a random sample. First, organizations determine whether applying for grants is in their best interest. Then, government agencies select among the applicants, further complicating the analysis. The removal of organizations failing to receive government grants creates a selectivity bias that may affect estimated parameters (Heckman, 1976). Therefore, two problems need to be corrected. First, a panel dataset is necessary given the differences in cross-sectional and panel estimates found in previous research (Khanna, et al., 1995; Okten & Weisbrod, 2000). Second, an attempt to account for the selection is necessary to avoid (or at least minimize) potential bias in the coefficients.

The NCCS-Guidestar National Nonprofit Research Database (also known as Digitized Data) is the best available data to explain variation in government grants. It spans from 1998-2003 and includes the population of nonprofit organizations filing Form 990 with the IRS. More recent datasets do not include the population of nonprofits or fail to distinguish government grants from other sources of contributions. Digitized Data provide

information on the population of 501c(3) nonprofits filing Form 990 with the IRS, required of all non-religious nonprofits earning more than \$25,000 in any given year. As mentioned, it is one of the few datasets that disaggregates total contributions into government grants, donations from private individuals and corporations (direct support), and revenues from foundations (indirect support).

Six years of data are available and records are matched according to a unique organization identifier, the EIN. Due to entry and exit as well as smaller organizations with revenues fluctuating around \$25,000, information is not available for all organizations across all years. While the data is taken from forms filed with the IRS, some scholars question the reliability of the data (Froelich, Knoepfle, & Pollak, 2000; Gordon, Khumawala, Kraut, & Meade, 2007). Following Tinkelman (1999) and Marudas and Jacobs (2009), among others, observations for which the data are implausible are removed. This includes observations with negative values in accounting lines that should not be negative and instances where individual parts are greater than the whole. Also excluded from analysis are organizations whose primary missions are to collect funds for other organizations and do not provide services directly to the community. Table 1 provides more detail on the organizations excluded from analysis.

Unfortunately, we lose observations for which there are two or fewer years of data. The model, discussed in detail below, includes lagged variables and fixed effects, thus requiring a minimum of three years of usable data. A total of 177,329 organizations with 580,344 observations remain in the sample following the data cleaning outlined in the table.

Tables 2, 3, and 4 present summary data on the remaining organizations. In the case of the financial data in Tables 2 and 3, all monetary values are real, with 1998 serving as the

base year (CPIs taken from [Bureau of Labor Statistics, 2010]). The first of these two tables presents descriptive statistics while the second table compares variables' means by grant recipient status. Table 4 documents the representation of the 23 NTEE categories in the usable sample. (There are actually 26 categories according to the taxonomy, but two are dropped for having no usable observations – Philanthropy, Voluntarism, and Grant-making Foundations (T) and Mutual and Membership Benefit (Y), while Unknown (Z) contains an assortment of 273 unrelated organizations.) In addition to the frequency with which each category occurs, two additional columns present the categories' average reliance on government grants. A ratio of government grants to total revenues is calculated for each organization, and then the average of this figure is presented for the category and grant recipients within the category. (This number differs from that where total government grants are compared to total revenue within a category.)

Table 1**Observations Omitted from Analysis**

Number of Observations dropped	Reason for Removal
10,495	Negative Total Revenues (drop if not using)
93	Negative contributions
100	Negative direct Support
69	Negative Indirect Support
46	Negative Government Grants
143	Negative Fundraising Expenses
528	Negative Managerial / Administration Expenses
247	Negative Total Expenses
202	Negative Program Expenses
326	Program Expenses Exceeding Total Expense
79	Administrative Expenses Exceed total Expense
11544	Private Foundations
5205	Government Grants in Excess of Total Revenues
3636	Mutual Benefit Public Charities
170656	Supporting Public Charity (“Friends of, Booster Clubs, Foundations”)
143951	Single Organization /NTEE Category level fundraising, Grant making foundation, and general fundraisers
15,906	Working Capital Ratio greater than 20
1887	Price greater than 20
262,384	Zero Program Expenses
449	Category Z
55,263	One year of Data for Organization
77,764	Two years of Data
179,922	Observations in 1998*

Table 2

Select Summary Statistics (real values)

Variables	Mean	Median	Standard Deviation	Maximum
Government Grants	392292.5	0	5930750	1.36e+09
Program Expenses	3465091	207287.6	3.27e+07	5.14e+09
Administrative Expenses	519485.1	33448.98	4324717	4.09e+08
Total Expenses	4859615	262184.6	6.52e+09	2.75e+12
State Funding to Others	2.76e+08	7.33e+07	4.95e+08	3.60e+09
Net Assets - BOY	3719394	140982.4	7.79e+07	1.83e+10
Government Grants (when > 0)	962599.2	101632.5	9260695	1.36e+09
Price	1.345653	1.167342	.9109127	19.99971
Working Capital Ratio	1.181206	.5453086	136.4165	19.99989
Administrative Share of Total Expenses	16.4229	11.89598	18.08668	100

Table 3

Comparison of Means by Receipt of Government Grants

Variables	Mean for observations with Grants=0	Mean for observations with Grants>0
Government Grants	0	1,209,540
Program Expenses	3,178,847	5795394
Administrative Expenses	489,730.5	834137.2
Total Expenses	3,746,424	6726497
State Funding to Others	2.67x10^8	3.09x10^8
Net Assets - BOY	2,735,588	7,210,778
Price	1.375353	1.297652
Working Capital Ratio	1.196279	1.155944
Administrative Share of Total Expenses	16.69622	15.9648
Observations	363,474	216,860

The second and third columns in Table 4 illustrate interesting patterns of public support to the nonprofit sector. First, there is considerable variation in public support across categories. Form 990 filers classified as Religion-Related, for example, receive, on average, less than 2% of all revenues from the government. Of the less than six percent that receive any government grants, the average reliance is almost one-third. Other sectors rely more heavily on government grants. Thirty-six percent of organizations classified as Crime and Legal-Related, for example, report receiving government grants. For these recipients, the government contributes more than 60% of each organization's revenue, on average.

The most important observation to take from Table 4 is that conditional on receiving government grants, average reliance on this revenue source is fairly consistent (and high) across all categories. It is the proportion of organizations within a category that receive government grants that differs, but once an organization receives government funding, it tends to rely heavily on this source.

Table 4

Representation of NTEE Categories

Category	Frequency	Avg. Reliance on Government	Avg. Reliance on Government for Recipients
ARTS, CULTURE & HUMANITIES	19,043	.106	.226
EDUCATION	24,343	.112	.394
ENVIRONMENT	3,839	.171	.400
ANIMAL-RELATED	2,827	.061	.280
HEALTH CARE	15,796	.102	.310
MENTAL DISEASE & CRISIS INTERVENTION	7,007	.291	.552
DISEASES, DISORDERS, & MEDICAL DISCIPLINES	4,508	.155	.477
MEDICAL RESEARCH	1,346	.105	.472
CRIME & LEGAL RELATED	3,821	.347	.617
EMPLOYMENT	3,465	.253	.532
FOOD, AGRICULTURE & NUTRITION	1,909	.181	.338
HOUSING & SHELTER	12,636	.178	.463
PUBLIC SAFETY AND DISASTER PREPAREDNESS AND RELIEF	2,979	.258	.445
RECREATION & SPORTS	11,337	.032	.242
YOUTH DEVELOPMENT	5,016	.115	.294
HUMAN SERVICES	30,181	.241	.488
INTERNATIONAL, FOREIGN AFFAIRS & NATIONAL SECURITY	3,202	.074	.420
CIVIL RIGHTS, SOCIAL ACTION & ADVOCACY	1,415	.194	.515
COMMUNITY IMPROVEMENT & CAPACITY BUILDING	8,907	.258	.560
SCIENCE & TECHNOLOGY	1,332	.130	.430
SOCIAL SCIENCE	544	.093	.427
PUBLIC AND SOCIETAL BENEFIT	1,908	.120	.493
RELIGION RELATED	9,968	.019	.320
TOTAL	177,329	.157	.420

Finally, it is imperative to remember that the numbers above represent government grants and not government funding generally, which may also include government contracts.

Without information on government contracts, it is difficult to determine whether government funding across NTEE categories would converge or whether the difference would actually increase.

Although understanding the determinants of organizations' reliance on government grants as a share of total revenues is important, this topic is left for future research. Instead, this paper examines determinants of the level of grants reported by nonprofit organizations.

Right Hand Side Variables

We expect efficiency to affect the level of government grants, and therefore, two measures of efficiency are tested as determinants. First, *PRICE* represents the necessary increase in government grants to increase program expenses by \$1. It is calculated as the inverse of the share of expenses spent on programs for organization *i* in time *t*:

$$\text{Price}_{i,t} = (\text{Real Program Expenses}_{i,t} / \text{Real Total Expenses}_{i,t})^{-1} \quad (\text{EQ 1})$$

The above equation is one of two definitions of price, where the alternative compares donations to fundraising. Because of the focus on government grants, the alternative definition is less relevant than the one presented in EQ 1.

Despite the frequent use of price, criticisms of the measure are justified. The measure is based on average expenses rather than marginal changes (Brooks, 2006). If administrative and fundraising expenses for the year are fixed and already covered by current revenues, a greater percentage of a contribution goes to programs, producing a price lower than that estimated in EQ1. Using a price based on average rather than marginal may misrepresent the “efficiency” of an increase in contributions. Unfortunately, marginal values are not available, and readers should remain mindful of the shortfalls of this measure in particular.

The effect of price on private donations, as already discussed, is ambiguous, perhaps the result of information costs. If the government is more aware of finances and changes in resource allocation, then we expect that the government will reduce grants to organizations spending a decreasing share of expenses on programs. Thus, we propose the following hypothesis:

H1: Price is inversely related to the level of government grants, *ceteris paribus*.

The use of price as opposed to its inverse, program expenses as a share of total expenses, is also important. The obvious reason to use price is its frequent use in previous studies and classic economic interpretation. More importantly, however, is understanding the origins of the price measure. In a different formulation, price incorporated marginal tax rates faced by donors, therefore producing slightly different results than the measure used in this paper. Decomposing the initial measure, one can remove the tax rate, and assume that on average, the rate facing donors is constant across donors and years for a particular organization, thus moving the tax rate into an organization's fixed effects. A second reason for using price is that it symbolizes the indirect relationship between fundraising and contributions, or in this case, government grants. Fundraising is generally thought to increase contributions. Price, however, provides a functional form that is equal to the inverse of fundraising expense share plus administrative expense share. The inclusion of both allows us to measure the direct, positive effect of fundraising while allowing for the indirect and negative effect that increases in fundraising relative to other expenses can have on donors.

The second measure, *MSHARE*, represents administrative and managerial expenses as a percentage of total expenses. Bowman (2006) suggests that organizations that spend less on administration are more efficient than similar organizations. For almost 12% of the

sample, administrative expenses are reported as zero. Unlike program expenses, organizations reporting no administrative expenses are not removed. Although organizations could be counting the entire salary of program directors as program expenses, it is also possible that organizations operate with volunteers, avoiding managerial expenses.

Based on previous research, the author hypothesizes:

H2: Increases in administrative and managerial share of total expenses decrease government grants, *ceteris paribus*.

There are plausible reasons, however, why we might not find evidence in support of H2. For example, a nonprofit may invest in personnel more capable of submitting requests for government funding, thus increasing administrative expenses as a share of total expenses. Results supporting or refuting the above hypothesis could provide important insight into this relationship.

The two measures represent different aspects of efficiency, supported by a correlation of 0.48. Through the third major expense category, fundraising, it is possible that one of the above measures changes while the other does not. For example, if price is constant, this could indicate that program expenses and total expenses are constant. (It could also indicate that program and total expenses changed proportionally, which could produce a different set of implications.) With fixed program and total expenses, a change in fundraising as a share of total expenses implies a change in administrative expenses as a share of total, demonstrating how one proxy for efficiency remains constant while another changes. A second example would be the case in which administrative as a share of total expenses is held constant. A change in fundraising would suggest a change in price. Including both measures is important because one captures the relationship between fundraising and program

expenses while the other represents the dynamic between administrative and fundraising expenses, *ceteris paribus*.

Although the two measures are correlated as already mentioned, correlation does not bias results. Instead, analysis focuses on those parts of the two variables that are uncorrelated to predict parameters. Removing one from the model would probably increase the importance of the remaining variable but simultaneously bias results.

Both measures, however, have been criticized as failing to appropriately depict the efficiency of an organization. Brooks (2004), therefore, offers his own measure, the Adjusted Performance Measure. Calculation of this alternative measure is discussed in greater detail below, but generally speaking, it is a comparison of a nonprofit's actual performance to its expected performance, where expectations are calculated on factors assumed exogenous to the nonprofit. Organizations that perform better than expected receive a positive score, and those that underperform receive negative values. The greater the over/under performance, the larger the deviation from what is expected. Governments, particularly local and to some extent state governments, may compare organizations to similar nonprofits and form opinions based on these comparisons and expectations. Therefore, we expect the following:

H3: Increases in the Adjusted Performance Measures are positively related to government grants at the organizational level, *ceteris paribus*.

Because previous studies document variation in the significance and magnitudes of coefficients on these proxies (for example, see [Jacobs & Marudas, 2009; R. Steinberg, 1986a; Tinkelman, 2004]) based on nonprofit mission/category, the above measures are interacted with each of the NTEE categories.

In addition to the financial proxies for efficiency, a number of other organizational variables are likely to affect the level of government funding. Larger organizations, for example, may be better known in the community or able to make the argument that they meet a larger proportion of the demand. Thus, program expenses are included in the model (Marudas & Jacobs, 2008b).

Government funding at the organizational level may also be a function of the available resources by respective state agencies. The state was chosen as the appropriate level for defining the market since many of the government grants awarded to nonprofits appear to originate (or be administered through) the state agencies (Bowman, 2006; Smith, 2006). Previous research trying to proxy government interest in other contexts have used measures such as library expenditures or federal grants per capita to a county (including grants allocated to agencies other than nonprofits) (Gronbjerg & Paarlberg, 2001) or state/local tax revenues (Matsunga & Yamauchi, 2004).

Two sets of variables were considered for inclusion as a measure of a state's interest in a particular nonprofit industry. The first measure created from the dataset equaled the sum of grants awarded to an NTEE category within a state less what was awarded to organization i. The second measure – actually a set of measures – is data from the U.S. Census of Governments for 1998-2003 on expenditure categories for each of the 50 states. Specifically, information on state spending in the areas of education, public welfare, health, hospitals, parks and recreation, corrections, and natural resources is assembled for the purpose of representing the budgets of potential grant-making institutions. Because each agency is more likely to award grants to specific categories of nonprofits, these measures are also interacted with the NTEE categories.

The correlations between the measures above and government grants are low (absolute value consistently below 0.1), but the correlations between the sum of grants to others and state agency budgets are high (ranging between 0.61 and 0.88), suggesting that there is a significant relationship between agencies' budgets and the amount of grants awarded. Due to the high correlation, and the fact that inclusion of grants to others introduces additional statistical complications not a factor with the state budget variables¹, only variables of the state-level expenditures are included in the following empirical analysis.

Working Capital Ratio (*WCR*), equal to the ratio of net assets to non-fundraising expenses, is the final time-variant control in the model. It represents the number of years an organization can sustain its operations if total revenues fall to zero (and all fundraising ceases). A measure of financial health and used by Charity Navigator as an indicator of organizational capacity in their rating system, this measure estimates the ability of an organization to survive during an economic downturn assuming program and administrative expenses remain constant. For organizations in our sample, ten percent have no (or negative) net assets. Two thirds of organizations with positive net assets could support themselves for less than a year and a half. The top ten percent of organizations could sustain operations for 5 years or more.

In the case of private contributions, accumulation of net assets is associated with a decrease in donations (Marudas, 2004) . Donors may be deterred by the thought that their contributions are not being put to immediate use or the donors' preferences are to give to

¹ The sum of grants to others, as a variable in estimating G_i , would include the grants awarded to G_j . The predicted value for G_j , therefore, would also include the grant to G_i . Theoretically, this makes sense since grants are often awarded simultaneously. An additional instrument uncorrelated with G_i but correlated with the sum of grants to others would be difficult to identify. Nonetheless, models were estimated with this variable, and the coefficient on the sum of grants to others, while significant, was economically unimportant. (It suggested a \$100,000 increase in grants to others increased G_i by approximately \$40.) These results are available but will not be provided or discussed in the remainder of this paper.

organizations in immediate need (Handy & Webb, 2003). Despite private donors' response, greater working capital ratio is considered a positive signal of financial health (Chang & Tuckman, 1991).

Other characteristics are likely to explain changes in government grants, such as the organization's mission, location, and NTEE category. These factors are time-invariant, and along with other time-invariant unobserved characteristics, are included as fixed effects in the model. Unobserved organizational characteristics may also include the effort to obtain grants, the skill level of administration, and reputation. To the extent that these are independent of the efficiency measures and/or time invariant, these factors do not bias results. If, however, these factors are correlated with the variables and are time variant, they may account for a portion of the unexplained variation in government grants and/or bias results.

Many of the variables described above are lagged in the empirical specification to avoid simultaneity problems in estimation. For example, does an organization receive more government grants because it changed its administrative expenses, or did it change these expenses because it received government grants? The inclusion of the lagged term avoids this dilemma. Monetary variables are also transformed by taking the natural logarithm. In the cases of program expenses, state expenditures, and the dependent variable, government grants, one is added to all values. With controls included for year, the author proposes the following model to explain the level of government grants for nonprofit organizations. Equation 2 presents the model for analysis. As is always the case in fixed effects regression, coefficients for the time invariant variables are not estimated.

$$\begin{aligned}
\log(G_{i,t,c,m}) = & \beta_0 + \beta_1 * \log(PE_{i,t-1}) + FY' \theta_t + \beta_2 * \log(Price_{i,t-1}) + (\log(Price_{i,t-1}) * NTEE_i)' \lambda^1 \\
& + \beta_3 * WCR_{i,t-1} + (WCR_{i,t-1} * NTEE_i)' \lambda^2 + \beta_4 * MSHAREE_{i,t-1} + (MSHAREE_{i,t-1} * NTEE_i)' \lambda^3 + \\
& (BUDGETS_{t,m} * NTEE_i)' \lambda^4 + \gamma_m + v_c + \eta_i + \varepsilon_{i,t,c,m}
\end{aligned} \tag{EQ 2}$$

Where:

$G_{i,t,c,m}$ is government grants awarded to organization i in time t , community (in this case state) c , and market (or NTEE category), m ;

$PE_{i,t-1}$ is program expenses for organization i in time $t-1$;

FY is a vector of time indicators;

$Price_{i,t-1}$ is the inverse of program expense share defined in EQ 1 for organization i in time $t-1$;

$NTEE$ is a vector of NTEE categories (excluding Arts), where each variable is a 0,1 indicator for organization i ;

$WCR_{i,t-1}$, is the working capital ratio for organization i in time $t-1$;

$MSHAREE_{i,t-1}$ represents administrative and managerial expenses as a share of total expenses for organization i in time $t-1$;

$BUDGETS_{t,m}$ is a vector of the agency budgets for market m in time t ;

And γ_m , v_c , and η_i are time invariant components representing fixed market (m), community (c), and individual (i) effects.

A problem arises, however, when we consider the distribution and nature of the dependent variable, government grants. Sixty three percent of observations record zero grants, and there is a distinct element of self-selection in the receipt of government grants. (Presumably, an organization must choose to apply before a grant is awarded.) Conditional on receiving grants, the median total government funding for an organization exceeds

\$150,000, while the average is more than one million. Unfortunately, there is no data on the application for government grants or the number of grants awarded, but we can assume that a positive value of government grants indicates that an organization applied and was selected for at least one award. Analysis that includes zero-grant observations or excludes all zero-grant observations (such as that in [Marudas & Jacobs, 2009]) without adjustments for the self-selection component are likely to produce biased results.

Heckman (1976) proposed a two-step procedure, frequently used in labor economics to estimate wages (selection occurs with entrance into the labor market) but also used to estimate consumer expenditures on items such as durable goods or health care (see [Greene, 2002]). The first step involves a probit equation to estimate selection, followed by an OLS regression on positive values that includes the inverse mills ratio (a ratio of the probability density function to the cumulative density function of the predicted probabilities from step one). The process also includes a transformation of the variance covariance matrix used to estimate standard errors in the second step (Heckman, 1976).

Unfortunately, a fixed effects probit model poses statistical problems in estimation. Unlike coefficients in linear models, coefficients in probit models are sensitive to which category is omitted as the control – thus producing biased estimates. Heckman (1981) initially suggests that the bias is reduced as T increases, with the magnitude approaching 10% when $T=8$ (Heckman, 1981). More recent studies using Monte Carlo methods question the original findings and suggest that the bias may be large even with considerably large T s, [see (Greene, 2004) for discussion]. With a large N but a T limited to 6 (5 with lagged variables), the inclusion of a series of dichotomous indicators for tens of thousands of organizations is not a feasible solution and would likely produce biased results. Greene

(2001, 2004) suggests that the estimates of a probit regression that ignores individual heterogeneity (fixed effects) may not be any worse than estimates obtained with individual controls (Greene, 2001, 2004)².

Based on Greene's (2001, 2004) conclusion, the author estimates a probit model without individual organizations' fixed effects. The author does, however, include time invariant variables such as the NTEE category. Controls for fiscal year are also included. (Interactions between categories and year were found to add little to the model's explanatory power). All of variables used in the fixed effects equation (EQ 2) – including the efficiency measures and interactions – are included. Additional variables are included in the probability of receiving government grants equation, specifically, the number of competitors in the market (excluding organization i), the number of these organizations receiving funding from the government, and the average award size to these recipients. Equation 3 models the first step, probit regression.

$$\begin{aligned} \Pr(GR_i=1|X_i)=\Phi(& \alpha_1*(\Sigma_{C,M}NP_{-i,t})+\alpha_2*((\Sigma_{C,M}GR_{-i,t})+ \alpha_3*((\Sigma_{C,M}G_{-i,t})/\Sigma_{C,M}GR_{-i,t}))+NTEE_i'\delta + \\ & \beta_1*\log PE_{i,t-1} + FY_t'\theta_t+\beta_2*\log(Price_{i,t-1}) + (\log(Price_{i,t-1})*NTEE_i)'\lambda^1 +\beta_3*WCR_{i,t-1} + (WCR_{i,t-1} \\ & *NTEE_i)'\lambda^2 +\beta_4*MSHAREE_{i,t-1} + (MSHAREE_{i,t-1}*NTEE_i)'\lambda^3 + (BUDGETS_{t,m}*NTEE_i)'\lambda^4) \end{aligned}$$

(EQ 3)

Where $\Sigma_{C,M}NP_{-i,t}$ equals the sum of nonprofit organizations in community c, market m, in time t, excluding organization i;

$\Sigma_{C,M}GR_{-i,t}$ is the number of organizations in community c, market m that received grants in time t, excluding organization i; and

² (Greene, 2004)) also suggests that random effects estimates are worse than fixed effects and no effects estimates when the assumptions necessary for consistency are not met.

$\Sigma_{C,M}G_{-i,t}$ equals the sum of government grants awarded to organizations in community c , market m , excluding awards to i .

Following the estimation of the probit regression, values for the predicted probabilities are used to calculate the inverse mills ratio. These are used in the second step. The inverse mills ratio, along with the sample size, the coefficient for the inverse mills ratio, and error terms are all used to transform the variance covariance matrix and develop weights for each observation. These weights are then used in a Weighted Least Squares approach (with fixed effects), and the standard errors from this regression are used to evaluate the significance of coefficients from the second step (Smits, 2003).

Results

Partial estimates from three regressions are presented in Table 5 for comparison. The first column presents estimates from an OLS model that does not include organizational fixed effects. It does, however, include time-invariant indicators for NTEE category. The second column includes estimates from a fixed effects regression on the full dataset. Finally, results from the second step of the Heckman are presented in the last column. Organizations from all 23 usable categories are included in the analysis below, but the results in Table 5 are limited to Arts and Culture (A) organizations.

Significant differences exist between the regressions, demonstrating the importance of finding a model that produces unbiased estimates. For example, the OLS estimates in the first column suggest a strong relationship between organizational size and the level of grants, with a one percent increase in size expected to increase the average of government grants by approximately 0.72 percent. Larger organizations are expected to receive larger grants, *ceteris paribus*. This finding is not surprising, but notice that this figure is reduced by close

to 90% to less than 0.08 percent when we include organizational fixed effects. And once we control for the selection of grant recipients, we again find a significant reduction in this coefficient to less than 0.02 percent, suggesting that increases in organizational size by recipient organizations is not an important factor in estimating government grants for the following year.

The opposite trend emerges in the coefficient for price. Insignificant and small in magnitude in the first two regressions, results in the third column suggest that for organizations receiving government funding, a ten percent increase in price (a reduction in efficiency) is expected to decrease the average of government grants by 1.8 percent for arts organizations. Inclusion of non-recipients, in this case, diminishes the effect that changes in price could have on government grants for organizations currently receiving government funding.

Also of interest are the changes in coefficients for the state budget expenditure categories. Generally speaking, for the Arts, controlling for selection reduces the magnitude (absolute value) and significance of changes in government expenditures for all but two expenditure categories, education and natural resources. Different patterns emerge for other NTEE categories. Further investigation of these results is warranted but beyond the scope of this essay.

Table 5

Select Coefficients from Estimation

	OLS with Category Controls	FE with clustered errors	FE, clustered errors, & Heckman Correction
Real program expenses (ln,t-1)	0.71926*** (0.00431)	0.07385*** (0.00859)	0.01861** (0.00803)
FY99	-0.04561* (0.02411)	-0.13275*** (0.01845)	-0.07675*** (0.0064)
FY00	-0.00195 (0.02339)	-0.08974*** (0.01622)	-0.04564*** (0.00582)
FY01	0.02559 (0.02295)	-0.03892*** (0.01339)	-0.00937* (0.00527)
FY02	0.04032* (0.02269)	-0.00409 (0.01032)	0.01105** (0.00459)
Price (log, t-1)	0.0497 (0.08857)	-0.02981 (0.06509)	-0.18190*** (0.02718)
Administrative Expenses Ratio	0.03543*** (0.00173)	0.00313** (0.00156)	0.00062 (0.0007)
Working capital ratio (beginning of year)	-0.08265*** (0.00618)	-0.0149 (0.01291)	0.01645*** (0.00419)
Education Expenditures (log, t)	-0.05437 (0.1425)	-0.23702 (0.17969)	-0.14267* (0.08497)
Public Welfare Expenditures (log, t)	0.35744*** (0.08832)	0.17163 (0.14069)	-0.02841 (0.04674)
Hospital Expenditures (log, t)	-0.12298*** (0.03644)	-0.09717** (0.04459)	-0.01323 (0.01341)
Health Expenditures (log, t)	-0.52289*** (0.06946)	0.31064*** (0.0849)	0.04078 (0.0343)
Corrections Expenditures (log, t)	0.03909 (0.09251)	-0.28986* (0.16274)	-0.01641 (0.05761)
Natural Resource Expenditures (log, t)	-0.11037** (0.05488)	-0.00799 (0.09248)	0.10194** (0.04234)
Parks-Recreation Expenditures (log,t)	0.35397*** (0.04297)	0.07538 (0.07387)	0.01057 (0.0229)
Observations	552028	550256	211098
R-squared	0.15	0	0.02
Number of ein		166807	70304

Standard Errors in parentheses; * significant at 10%, ** significant at 5%, and *** significant at 1%

Given the variation in estimated coefficients, the author selects those from the probit / fixed effects two-step procedure as those most likely to describe the variation in government grants. Table 6 presents estimates from the two steps for each of the measures highlighted in this paper. Note that both measures are included in each of the two estimations (the first step (Probit) and the second step (Fixed Effects)). The numbers below are not the coefficients but the actual expected effect (in percent change) on government grants for each category (equal to the sum of the coefficient on the omitted interaction (Arts) and the estimated coefficient). For variables not transformed with a log, the number below is equal to one less the exponential of the coefficient times one hundred.

With respect to price, the author finds that changes significantly affect the level of government grants in 15 of 23 categories. In all but two of the categories (Public Safety and Disaster Preparedness/Relief (M) and Civil Rights, Social Action, and Advocacy (R), price is negatively related to government grants, with the largest effect for organizations classified as Environmental (C). The coefficients must be interpreted with caution, however, given the additional controls in the model. With administration's share of expenses and program expenses included as additional controls, changes in price are directly related to changes in fundraising as a share of total expenses. The lower the price – the lower total expenses in year $t-1$, and thus the greater the share of program expenses as a percentage of total expenses. More specifically, administrative expenses must fall but in proportion to the decline in total expenses so that the ratio of administrative to total expenses remains constant. The bulk of the drop in total expenses, therefore, is attributed to less fundraising expenses in the previous year.

Table 6

Marginal Effects on the probability and level of Government Grants

Category	Price		MSHARE	
	Probit Effect	Fixed Effects Effect	Probit Effect	Fixed Effects Effect
Arts, Culture & Humanities	0.009	-0.182 ***	0.003 ***	0.062
Education	-0.159***	-0.152 *	0.003 ***	-0.263**
Environment	-0.098***	-0.797 ***	0.002 ***	0.389**
Animal-Related	-0.159***	0.001	0.003 ***	-0.162
Health Care	-0.051***	-0.373 ***	0.003 ***	0.239
Mental Disease & Crisis Intervention	0.211***	-0.147	0.002 ***	-0.455***
Diseases, Disorders, & Medical	-0.216 ***	-0.143	0.002 ***	-0.272
Medical Research	-0.197 ***	-0.151	0.004 ***	-0.490
Crime & Legal Related	-0.246 ***	-0.230 *	0.002 ***	-0.319*
Employment	-0.110 ***	-0.366 ***	0.001 ***	-0.094
Food, Agriculture & Nutrition	-0.157 ***	-0.155	0.002 ***	0.045
Housing & Shelter	-0.001	-0.473 ***	0.004 ***	-0.119
Public Safety And Disaster Preparedness And Relief	-0.156 ***	0.236 ***	0.001 ***	0.210
Recreation & Sports	-0.031 **	-0.323 ***	0.004 ***	-0.352*
Youth Development	-0.139 ***	-0.191	0.004 ***	-0.410**
Human Services	-0.147 ***	-0.092 *	0.001 ***	-0.096
International, Foreign Affairs & National Security	-0.113 ***	-0.517 **	0.011 ***	-0.093
Civil Rights, Social Action & Advocacy	-0.402 ***	0.599 **	0.005 ***	-0.754***
Community Improvement & Capacity Building	-0.175 ***	-0.115 *	0.003 ***	0.011
Science & Technology	-0.139 ***	-0.515 *	0.003 ***	-0.670*
Social Science	-0.238 ***	-0.269	0.003 ***	-1.414**
Public And Societal Benefit	-0.226 ***	-0.249	0.003 ***	-0.405
Religion Related	-0.070 ***	-0.707 **	0.001 ***	0.632**

* Significant at 10%, ** significant at 5%, and *** significant at 1%

With administrative expenses as a share of total, we find a statistically significant relationship between the measure and expected government grants in ten categories. For most of these categories, increases in administration's share of total expenses reduces the expected level of government grants, but in two categories, Environment (C) and Religion (X), the opposite is true. Recall, however, that we are holding program expenses and program expenses as a share of total expenses (via price) constant. Therefore, changes in administrative share are likely the result of changes in fundraising levels. With this interpretation, the results are more surprising.

It would be remiss not to emphasize the significance of the same proxies in the first step (probit) analysis. The financial proxies for efficiency of price and administrative expenses have significant effects on the probability of receiving government grants in 21 and all 23 of the categories, respectively. While administrative expenses as a share of total expenses is always statistically significant, the magnitude of each coefficient is small. Price appears to have the most consistent effect on the probability of receiving government grants. A ten percent increase in price is expected to affect the probability of receiving a grant between one and four percentage points, *ceteris paribus*.

A second way to analyze the data is to consider the categories and the financial proxies (or combination of proxies) that significantly affect expected government grants. Table 7 presents a classification of NTEE categories by the combination of significant measures. From this table, we can easily identify those categories that appear less responsive (on average) to changes in the proxies for efficiency. Even for the five categories in the "None" column, it is still the case that changes in the efficiency measures significantly affect

the probability of receiving government funding. Unfortunately, a clear pattern explaining the grouping of organizations into the four groups below does not emerge.

Table 7

Comparison of Statistically Significant Efficiency Measures

None	Price Only	Admin. Only	Price & Admin
Food	Employment	Mental Health	Education
Diseases, Disorders	Community	Social Science	Civil rights
Animal-Related	Housing	Youth	Science & Technology
Medical Research	Public Safety		Environment
Public Benefit	International		Crime
	Arts		Recreation
	Health		Religion
	Human Services		

Adjusted Performance Measures

Brooks (2004) suggests nonprofits may not be assessed on the absolute levels of the financial proxies for efficiency but rather on their performance relative to other similar organizations. He develops the idea of Adjusted Performance Measures (APMs), measures that control for exogenous factors beyond the organizations' control. Using census variables from the American Community Survey Public Use Microdata Sample: 2000-2003, the author regresses program expense share on a set of controls including demographic and economic variables, similar to the model suggested by Brooks (2004). The necessary variables were only available for 2000-2003 for 367 MSA's ranging from Albany-Schenectady-Troy, NY to Youngstown-Warren, OH, further limiting the sample to 325,987 observations for 144,483

organizations. (This measure is excluded from the previous analysis because of its effect on sample size.) Results from this regression are presented in Table 8.

Interestingly, the initial regression included total population, but the coefficient was insignificant. Thinking of gender differences that emerged in experimental literature on public goods and dictator games (Andreoni & Vesterlund, 2001; Croson & Gneezy, 2009), the author includes male and female populations as separate controls and found convincing evidence that the gender composition of a city affects nonprofit resource allocation. Education, age, diversity, and economic/ labor market variables are also significant in predicting expected levels of program revenue share.

Following the estimation, predicted values are calculated and then subtracted from the actual value to calculate the residual. In the original article, Brooks argues that organizations should be ranked according to their performance (measured by the residual), but more information may be available in the residuals, and this is confirmed with a comparison of models using residual and rank (not presented). Interaction terms between the APM's and the NTEE categories are created, and then the two-step process from above is replicated with the new set of variables. Again, the lag of the APM is used in the analysis. Although the first two measures and interactions are still included, estimates are presented only from the new set of variables. The full sets of results are available upon request.

Table 8

Predicting Expected Program Expense Shares	
Variable	Non-Fundraising Share
Total Revenue (log)	0.108*** (311.35)
Males (log)	-0.151*** (4.83)
Females (log)	0.145*** (4.63)
Percent with at least Bachelor's degree	-0.001* (1.84)
Percent with High School but no Bachelor's	-0.001*** (4.09)
Percent Minority (race)	0.000*** (3.44)
Unemployment Rate	-0.001 (1.62)
Number of families in poverty (log)	0.001 (0.87)
Percent of population over 65	-0.001* (1.95)
Percent of population under 5	0.012*** (6.78)
Average household income (log)	-0.040*** (5.06)
Percent of non-citizens	-0.001** (2.34)
Percent of Foreign-born citizens	0.003*** (5.05)
Percent Hispanic	-0.000*** (3.53)
Share of Labor Force in Management	0.002*** (3.38)
Share of Labor Force in Service	0.000 (0.16)
Median Age	0.004*** (4.72)
Constant	-0.290*** (3.29)
Time & Category Controls	YES
Observations	325987
R-squared	0.28

Absolute value of t statistics in parenthesis; * significant at 10%, ** significant at 5%, and *** significant at 1%

Table 9 presents the effects of changes in over/under performance relative to similar nonprofits in the organization's community on the level of government grants. The first column estimates the effect of a one unit change, but for this variable, a one unit change is equivalent to three standard deviations. The use of the exponential form in interpreting the coefficient complicates matters further given the nonlinear nature of the function. The second column, therefore, includes an estimate of the percent change of government grants given a one standard deviation change in the residual, equal to 0.33. Estimates in bold are significant at the 10% level.

Eleven of the twenty three categories are significant, with all but one (Health) positive, as expected in Hypothesis 3. The magnitude of these coefficients, however, was largely unexpected. A one standard deviation increase in over performance, for example, increases expected funding to the Arts by approximately two-thirds. For international organizations, a similar increase more than doubles the expected level of government grants. In the first step, however, we find that increases in performance are actually associated with a decrease in the probability of receiving funding, a puzzling result. This suggests over-performance is negatively associated with receiving grants, but when grants are awarded, the government rewards performance. Results from the first step are presented in Table 10.

Table 9

Effects of Changes in Performance on Government Grants

Category	Expected Percent Change in Government Grants with 1 Unit change in APM	Expected Percent Change in Government Grants with 1 Standard Dev. change in APM
Arts, Culture & Humanities	369.19	66.55
Education	41.66	12.18
Environment	563.07	86.69
Animal-Related	-17.42	-6.12
Health Care	-51.12	-21.04
Mental Disease & Crisis Intervention	225.35	47.60
Diseases, Disorders, & Medical Disciplines	30.86	9.28
Medical Research	249.60	51.14
Crime & Legal Related	19.85	6.16
Employment	329.71	61.79
Food, Agriculture & Nutrition	-59.86	-26.01
Housing & Shelter	150.49	35.39
Public Safety And Disaster Preparedness And Relief	-5.51	-1.85
Recreation & Sports	367.27	66.32
Youth Development	286.95	56.29
Human Services	21.25	6.57
International, Foreign Affairs & National Security	828.14	108.60
Civil Rights, Social Action & Advocacy	192.80	42.55
Community Improvement & Capacity Building	92.51	24.13
Science & Technology	900.91	113.86
Social Science	-99.05	-78.52
Public And Societal Benefit	227.41	47.90
Religion Related	-38.04	-14.61

Significant effects in bold

Table 10**First Stage Heckman Results for Adjusted Performance Measures**

Category	Effect of APM on the Pr. Of Receiving Grant
Arts, Culture & Humanities	-0.570 ***
Education	-0.435 ***
Environment	-0.101
Animal-Related	-0.345 ***
Health Care	0.306 ***
Mental Disease & Crisis Intervention	-0.308 ***
Diseases, Disorders, & Medical Disciplines	-0.405 ***
Medical Research	-0.800 ***
Crime & Legal Related	-0.286 ***
Employment	-0.266 ***
Food, Agriculture & Nutrition	-0.546 ***
Housing & Shelter	-0.086
Public Safety And Disaster Preparedness And Relief	0.289 ***
Recreation & Sports	-0.227 ***
Youth Development	-0.203 ***
Human Services	-0.099
International, Foreign Affairs & National Security	-0.665 ***
Civil Rights, Social Action & Advocacy	-0.023
Community Improvement & Capacity Building	-0.261 ***
Science & Technology	-0.590 ***
Social Science	-0.487 ***
Public And Societal Benefit	-0.039
Religion Related	-0.320 ***

*** Significance at the 0.01 level

Discussion and Conclusion

Although previous studies questioned the responsiveness of private contributions to changes in financial proxies for efficiency (see [Khanna, et al., 1995], for example), the

government appears to be more sensitive to changes in the three measures used above with considerable support for each of the earlier mentioned hypotheses. Price, for example, is negative for twenty categories. Thirteen of the fifteen significant categories are negative, with estimates suggesting that a ten percent change in price reduces government grants anywhere from 1 to 8 percent. The positive and significant coefficients on Public Safety and Civil Rights organizations are a bit of an anomaly. Given the other controls in the model, this suggests that the government rewards increased fundraising efforts by these organizations, whereas it generally punishes increases in fundraising expenses by other types of organizations.

The second measure, administrative expenses, is negative for the majority of categories, suggesting that when controlling for program expenses and total expenses, the government prefers to see resources allocated to fundraising rather than administration. We must be careful, however, in making recommendations based on this finding. The first step of the Heckman procedure estimating the probability of receiving government funds suggests a small but consistently positive relationship between administrative expenses and the probability of receiving funds. Perhaps this result indicates that organizations seeking government funds allocate more resources towards administration to help prepare higher-quality applications for government funding.

Adjusted Performance Measures, when added into the analysis, produce what may be the most interesting set of results. Results from the second step support the third hypothesis. Organizations that spend a greater share of their resources on programs than what is expected increase their level of government grants received. Perplexing, however, are the results from the first step. An increase in performance relative to others decreases the probability of

receiving government grants. These two findings together suggest that from the pool of recipients, larger grants are awarded to more efficient organization, but it is unclear whether the best performing organizations are failing to apply or are simply not selected. Future research into why organizations apply for government funding and the process government agencies use to select recipients is necessary to understand the observed phenomenon.

Significant differences exist across categories, both in the significance and signs of each measure and the set of measures that have a significant effect on government grants for each category

Although the results suggest a statistically significant relationship between efficiency measures and government grants, there remain additional issues that are not easily solved with the data available. First, the lack of variation in government funding within an organization suggests that grantors operate on a largely incremental basis. In a budgeting context, incrementalism postulates that government agencies alter their budgets on a yearly basis by copying the budget of the previous year with minimal changes. In the case of grants, government agencies may determine the level of funding using the previous years' funding as a guide. (Similar budgeting philosophy by nonprofits may also explain the relatively small changes in the financial proxies from one year to the next.) An incremental approach to grant making (or the even spread of a multi-year grant across time) could produce a lower bound estimate of the association between grants and efficiency measures. Efficiency measures may change, but government grants remain stable in this instance, thus reducing the ability of efficiency measures to explain variation in grants. Additional information on government grants and a longer time span are necessary for addressing this problem.

The second possibility is that the efficiency measures, while statistically significant, fail to capture the worthiness of organizations (Brooks, 2004, 2006). While there is merit to the objections raised, the ease at which we can dismiss financial proxies for efficiency as determinants of grants decreases as we move away from local governments. Higher levels of government may be less familiar with specific organizations and instead rely on financial information when nonprofits apply for grants or report on their progress.

Another possibility is that this model fails to fully capture the dynamic between government grants and nonprofit efficiency. A study on board composition, for example, found that major donors participating on the finance committee reduces administrative expenses as a share of total expenses (Callen, Klein, & Tinkelman, 2003). In this case, the monitoring may be responsible for changes in behavior. The same could be true of government grants. Funding is awarded, and then because of increased oversight or a decreased dependency on private contributions, the nonprofit alters its expense allocation (Andreoni & Payne, 2003). This suggests a causal relationship between efficiency and grants that works in the opposite direction than that assumed in this paper. This paper uses lagged variables to control for this possibility, but further research is still necessary to determine the extent to which government grants may alter organizations' expense decisions.

While a number of questions pertaining to efficiency measures and government grants have been addressed in this analysis, the research generates even more questions. For example, is there a relationship between the effect of each efficiency measure and the organization's dependence on government grants as a share of total revenues? What explains the set of measures that are significant for each category, and why do the effects of the efficiency measures vary across categories? Aside from the efficiency measures, what other

factors contribute to the level of government grants? Controls for state expenditures and working capital ratios were included in the models but not analyzed and discussed. Like the efficiency measures, coefficients on these measures (available upon request) varied in significance and were occasionally counter to what we would expect. These patterns are also worth further exploration.

Although a number of anomalies emerge, this paper presents a unique analytical approach to understanding the determinants of government grants on a diverse set of nonprofit organizations. This paper improves on the empirical technique used in the only similar analysis, and despite the lack of research on this topic, it should be of interest to the nonprofit and public sectors. For nonprofits, these figures suggest what they might expect in terms of government grants given changes in their financial positions and resource allocation, factors organizations can control. For governments awarding grants, this research allows them to look at a broader spectrum of organizations and how the government is allocating resources. Are they rewarding organizations that perform well? Why are organizations that “over-perform” less likely to receive grants? If they are not applying, perhaps the government should ask why. Are there changes needed to the application and award process that would better reflect the goals of the government and the constituents? The nonprofit sector is undoubtedly an important part of the U.S. economy, and the relationship between it and the public sector is worthy of continued exploration both on theoretical and empirical grounds.

Determinants of Contributions to Nonprofit Organization: Revisiting the Old and Exploring the New

In an effort to reconcile Adam Smith's *Theory of Moral Sentiments* with recent findings from experimental economics, Ashraf, Camerer, and Loewenstein (2005) note Smith's understanding of the roles altruism, fairness, and trust in the establishment of a well-functioning market economy (Ashraf, Camerer, & Loewenstein, 2005). The set of values emerges as a primary explanation for contributions to public goods—including donations to the nonprofit sector—along with several other notable concepts such as warm-glow (Andreoni, 1990) or prestige (Glazer & Konrad, 1996; Harbaugh, 1998). Summarizing Smith's original ideas, Ashraf et. al. (2005) write, "[People] display erratic patterns of sympathy, but are consistently concerned about fairness and justice. They are motivated more by ego than by any kind of direct pleasure from consumption..." (p. 142).

The quotation above suggests that individuals will contribute to nonprofit organizations for reasons that are both altruistic and selfish, but regardless of why individuals give, it is likely that charitable contributions will remain a significant source of revenues for nonprofit organizations. Despite a growing body of literature on the subject, we still have a limited understanding as to the determinants of charitable contributions at the organizational level. To some extent, our failure to assemble a theory of private contributions that withstands empirical testing may result from the dichotomy that exists in current research. One group of scholars examines the relationship between functional forms of resource allocation (otherwise referred to as financial proxies for efficiency) and aggregate contributions to the nonprofit organization (see for example (Okten & Weisbrod, 2000; Parsons, 2003; Tinkelman & Mankaney, 2007)). A second group of scholars focuses on the

relationship between alternative funding streams, namely government grants, and private contributions, with debate as to whether government funding crowds out private contributions or signals organizational quality (Andreoni & Payne, 2003; Payne, 1998; R. Steinberg, 1991; Tinkelman, 2010). Relatively little research exists on a third possible determinant, program service revenues. A recent article by Kerlin and Pollack (2010) challenges the anecdotal theories that nonprofits turn to program service revenues to compensate for declining contributions and government grants (Kerlin & Pollak, 2010), but research has largely failed to address the possibility that donors respond to earned revenue streams in a similar manner as they do government grants. Complicating the issue is that the relationship between funding sources and resource allocations is likely endogenous, a problem addressed in relatively few empirical analyses (see for example [Andreoni & Payne, 2003; Harrison & Laincz, 2010]).

The purpose of this essay is to better answer the frequently asked question, what affects private contributions at the organizational level? To accomplish this task, the remainder of this paper is organized as follows. First, the importance of private contributions to the nonprofit sector is discussed and existing literature on the determinants of charitable contributions at the organizational level is summarized. Then, a theoretical model and empirical techniques to produce unbiased estimates are presented. Data, primarily from the NCCS Digitized Data, are described and summarized in the fourth section. Results, robustness checks, and discussion of the results immediately follow.

Contributions to the Nonprofit Sector

During 2009, *GivingUSA* estimated that private charitable contributions exceeded \$300 billion, including donations to public charities and religious congregations. A 3.2%

decline in real contributions from the previous year was one of the largest losses for the sector in more than 5 decades (*Giving USA 2010: The annual report on philanthropy for the year 2009*, 2010). Focusing only on public charities filing Form 990 with the IRS, private contributions constituted 12.3% of reporting agencies' revenues (Blackwood, et al., 2008), but the average reliance on contributions as a share of total revenues, weighting all organizations equally, approaches 25% (National Center for Charitable Statistics, 2003). New organizations, in particular, rely more heavily on contributions during their first year of operations, and reliance on contributions by new organizations has increased at a significantly faster rate than existing organizations (Harrison & Wilsker, 2011). Although not the largest source of income for the sector as a whole, its uniqueness to the nonprofit sector and importance to many organizations in maintaining service provision warrants additional research on the determinants of contributions.

Theories and Research on Contributions at the Organizational Level

Dependence on private support varies considerably across nonprofit subsectors. Fisher, Wilsker, and Young (2010) and Wilsker and Young (2010) theorize that dependence on contributions depends on the nature (or mix) of the services provided. Specifically, the more a service resembles a public good, the greater the nonprofit's reliance on contributions (Fischer, et al., 2010; Wilsker & Young, 2010). Wilsker, Young, and Grinsfelder (2010) further clarify the theory by stating that organizations with redistributive missions, regardless of the nature of service, similarly depend more on private contributions (Young, Wilsker, & Grinsfelder, 2010). This theory claims a stronger causal link between funding sources and the nature of services provided, whereas existing theory of "donative nonprofits" simply stated that the percentage of donated revenues proxies for the public-ness of services

provided (Hansmann, 1987). The benefits theory, as (Young, 2007) originally described, details the expected relationship between contributed and earned revenue sources.

Government Grants

A second theory can also be used to explain variation in subsector dependence on contributions, but this one focuses on the relationship between contributions and government grants. Theoretically, if nonprofits provide pure public goods, and donors care only about the level of services provided, then once the optimal level of output is reached, increases in government contributions should be offset by declining contributions (Roberts, 1984; Warr, 1982). Research in this area, however, has generally found incomplete crowding out – that is, a dollar increase in government funding reduces contributions by some amount less than a dollar (see R. Steinberg [1991] or Tinkelman [2010] for reviews of the literature).

The failure of empirical results to match the theory has spawned numerous explanations. Perhaps the best known explanation is that from Andreoni and Payne (2003) who hypothesize that unobserved factors increase grants, fundraising, and contributions simultaneously. Once the authors attempt to correct for endogeneity, they find that increases in government grants reduce the fundraising efforts of organizations. Reduced fundraising may then explain some of the observed crowding out. Harrison and Laincz (2010) suggest that the frequency of grant receipts may also explain observed patterns between fundraising and government grants. If nonprofit organizations are expenditure smoothing and money is assumed fungible, then a windfall grant in one year may be passed along to future years by investing in (future) fundraising. If the organization expects to receive the grant for multiple years, then the organization may reduce fundraising (Harrison & Laincz, 2010).

Crowd-out may also be partially offset by crowding-in (Heutel, 2009) or an increase in the number of donors (Brooks, 2003) if grants signal organizational quality. And if individuals feel warm-glow, that is, a utility-increasing feeling independent of the level of services provided, then this, too, mitigates the crowd-out effect. Finally, the lack of knowledge by potential donors may explain the variation in findings across studies (Horne, et al., 2005).

Tinkelman (2010) provides the most recent review of the literature. Based on an analysis of previous findings and historical trends in the sector, he concludes that crowding out, as traditionally described, is unlikely. Increases in government funding over the last several decades would have driven contributions down dramatically. That did not occur, and instead, contributions to the sector as a whole have remained stable. Instead, it appears individuals may reallocate their funding from one subsector to another, and it is changes in what private donors contribute that may spur significant changes in government grants (Tinkelman, 2010).

Steinberg (1991) states that estimates that fail to account for the level of government making the grant to the nonprofit are also subject to bias. Specifically, changes in federal funding may cause changes in state (or local) funding in addition to changes in private contributions. Aggregated measures of government funding cannot account for this change, and thus coefficients are biased. If Steinberg is correct, however, in that state and local governments respond to changes in federal grants, than the coefficients predicted in OLS (or similar models) likely underestimate the effect that changes in federal funding of nonprofits has on other revenue streams.

Studies focusing on the relationship between government grants and contributions are distinct from other research on organizational determinants of contributions in that most of the more recent research recognizes the problems of endogeneity and attempts to correct for this problem (see for example Andreoni and Payne (2003) and Harrison and Laincz (2010)). Studies more interested in fundraising and efficiency, as discussed in the next section, do not give as much attention to this issue. Several papers such as Okten and Weisbrod (2000), (Marudas & Jacobs, 2004), and (Tinkelman, 2004) control for government grants by including a lagged variable, but little discussion is given to this variable, perhaps due to its lack of significance or economic importance in the final regressions.

Fundraising and Efficiency Measures

The relationship between government and contributions is complex, so one would hope for more straightforward relationships between contributions, fundraising, and efficiency measures. Unfortunately, such is not the case. First, it is important to distinguish between fundraising and efficiency, and then present reasons why these topics are discussed jointly in this section.

On the surface, fundraising and efficiency are distinct topics. Fundraising refers to monetary outlays intended to generate greater revenues for the nonprofit organization. Efficiency refers to the ability of the nonprofit organization to provide the greatest services with the least amount of program expenses. The two concepts could be mutually exclusive, but the lack of good efficiency measures resulted in numerous scholars generating financial proxies for efficiency, often based upon organizations' expenditures, including fundraising (Baber, Roberts, & Visvanathan, 2001; Weisbrod & Dominguez, 1986) or managerial

expenses (Bowman, 2006; Frumkin & Kim, 2001). For this reason, these two are often linked in the literature and will likely remain so until better measures for efficiency emerge.

Steinberg (1986), for example, attempts to identify the objective functions of nonprofit organizations by calculating their marginal returns to fundraising. The most tested financial proxy of efficiency, price, involves using the inverse of fundraising as a share of total expenses (Weisbrod & Dominguez, 1986). The next section first prevents previous estimates of the effects of fundraising and efficiency on contributions, and then discusses reasons for ambiguity in these results.

Perhaps the first attempt to assess the determinants of contributions to a nonprofit organization was that by Weisbrod and Dominguez (1986), in which the authors regressed donations (logged) on what they referred to as advertising (fundraising) and price, the necessary donation to increase program expenses by one dollar. Analogous to the private sector, Weisbrod and Dominguez (1986) determine that donors respond positively to fundraising and negatively to price. After original findings were challenged by scholars using fixed effects methods and controlling for time-invariant characteristics (Khanna, et al., 1995), Okten and Weisbrod (2000) replicated much of the original work, this time using panel techniques and two-stage least square approaches. Although the authors only instrument for price and fundraising using lagged versions of these variables as instruments (along with the change in age, program service revenue, and grants), they conclude that nonprofit subsectors vary in their level of over- and under- fundraising, and price unambiguously decreases contributions. Studies on price continue to find results suggesting insignificant or negative relationships between price and contributions, often varying across nonprofit categories and model specifications (see Parsons [2003] for a review). Tinkelman

and Mankaney (2007) recently replicated earlier research, claiming that many of the insignificant results are in fact the result of unreliable data.

Other financial proxies for efficiency appear in the literature, most notably those using administrative expenses (as opposed to fundraising) as an indicator of efficiency. For example, Bowman (2006) determines that donors, when presented information on the overhead costs of organizations in a workplace giving campaign, decrease contributions to organizations with rising expenses.

Outside of an organized field experiment, it is unclear how much information donors receive and the extent to which donors are aware of a nonprofit organization's expense decisions or internal efficiency. Horne et. al. (2005), for example, demonstrate the lack of information donors report knowing about the organizations to which they donate. The source of poor information is not clear. Are nonprofits failing to provide quality information, or are the search costs greater than the typical donor wishes to incur (Buchheit & Parsons, 2006; HopeConsulting, 2010)?

Even when information is available, another set of scholars question the validity of such efficiency proxies (Brooks, 2004, 2006; R. Steinberg, 1986b). To reiterate, the measures fail to assess actual efficiency. Consider two nonprofits with equal total expenditures, one spending 80% on programs, and the other spending 85%. The former assists 100 beneficiaries, while the later helps 90. If the quality of services is the same, which organization is more efficient? Most would agree the first organization, despite lower expenses allocated to programs, but such is not the case when expenditures are used to proxy for efficiency. Steinberg (1986) raises additional objectives, that measures are based on averages rather than marginal values. Consider an organization that currently spends 30% of

its revenues on fundraising and administration. If you donate a dollar today, can we say that only 70% of your donation is used to programs? Not so, if fundraising and administration are fixed expenses that are already covered by existing revenue sources. It could be that one hundred percent of your donation goes to programs, again raising doubts about the validity of financial proxies for efficiency.

Earned Revenues

The last major determinant of contributions in my model is program service revenue. The ability to generate earned revenue may send one of several signals to potential donors and researchers alike. First, the ability to charge for services suggests the service is not a pure public good and instead is a rival good or exhibits some dimension of excludability. Second, earned revenues indicate that beneficiaries are not only willing but also able to pay (at least in part) for services rendered. These ideas again reflect upon the foundation of the benefits theory (Young, 2007).

Program service revenue appears as a control in several studies estimating contributions at the organizational level but is generally not the variable of interest. Tinkelman (2004), for example, lists program service revenue as a control, but fails to present estimated results for his full regression. In their two-stage estimation (instrumenting for other variables), Okten and Weisbrod (2000) find statistically significant but small coefficients for program service revenues, with elasticities between zero and 0.03. They use this as evidence that crowding out by earned revenues does not occur. Marudas and Jacobs (2004) also control for program service revenues, and like Okten and Weisbrod (2000), find weak evidence that program service revenues crowd out contributions. There was one statistically significant, negative coefficient (-0.01) across all of the categories tested, and

even this coefficient loses significance in other model specifications for the same category of nonprofits.

Again, the direction of the relationship between earned revenues and contributions is unclear. Are nonprofits unable to earn revenue more dependent on contributions, as Fischer et. al. (2010) propose? Or, are donors less willing to support organizations which can (and do) charge service recipients directly? The determinants of earned revenue, aside from the nature of service (Fischer, et al., 2010) , are largely unexplored in the literature. Some sources of earned revenues, particularly unrelated business activities, are suspected of resulting in mission drift (R. Steinberg & Weisbrod, 1998; Weisbrod, 1998), although more recent research has cast doubts upon the extent of mission drift due to this particular revenue stream (Jones, 2007). Overall, earned revenues constitute a considerable portion of nonprofit revenues, primarily the result of large Health, Education, and Arts subsectors.

Although the determinants of program service revenue are not identified in existing literature, it is possible that fundraising affects earned revenues in addition to contributions. Fundraising may alert community members to the nonprofit's services, for which these individuals may later pay. It is also possible that organizations incorrectly report advertising as fundraising, thus creating an empirical link between the two even if a theoretical link is unfounded. Finally, it can also be argued that earned revenues may be a function of efficiency, but again, the direction of the relationship is uncertain. Given a fixed level of services, increases in efficiency may indicate lower costs, and savings are passed on to service recipients. It is also feasible that increased efficiency allows for greater services rendered, and hence greater earned revenues.

Assembling a formal theory

Combining the ideas from above, the author begins with the theory proposed by Harrison and Laincz (2010) and make minor revisions that create interesting implications, not all of which will be addressed in the empirical part of this chapter. Nonprofit organizations are assumed to maximize a function V . Although V may encompass different factors for each organization, it is always assumed to be a function of S , service delivery. Organizations are interested in providing increasing levels of S , constrained by the level of revenues it can collect. In this case, money available for services equals contributions (C), earned revenues (R), and government grants (G) less fundraising expenditures (f). Given the interdependence of these factors, contributions are thought to be a function of earned revenues, government grants, fundraising expenditures, and efficiency (e). Fundraising is a function of government grants, which is a function of efficiency, and earned revenues are a function of government, efficiency, and fundraising. Mathematically, we have:

$$V(S) = V(C(f,G,e,R) - f(G,e) + G(e) + R(G,e,f)) \quad (\text{EQ 4})$$

First order conditions are as follows:

$$\text{FOC1: } \delta V / \delta G = V' * (\delta C / \delta G - \delta f / \delta G + 1 + \delta R / \delta G) \quad (\text{EQ 5})$$

$$\text{FOC2: } \delta V / \delta f = V' * (\delta C / \delta f - 1 + \delta R / \delta f) \quad (\text{EQ 6})$$

$$\text{FOC3: } \delta V / \delta e = V' * (\delta C / \delta e - \delta f / \delta e + \delta G / \delta e + \delta R / \delta e) \quad (\text{EQ 7})$$

$$\text{FOC4: } \delta V / \delta R = V' * (\delta C / \delta R + 1) \quad (\text{EQ 8})$$

The first order conditions provide interesting and new insights into problems identified in previous research. For example, FOC 1 suggests that the crowding out from government is not strictly a function of changes in contributions. More specifically, setting FOC 1 equal to zero, and assuming an interior solution, we find:

$$\delta C/\delta G - \delta f/\delta G + \delta R/\delta G = -1 \quad (\text{EQ 9})$$

The effect of government grants on contributions ultimately depends on the effect of the same grants on fundraising efforts and earned revenues. In instances where government grants replace earned income, implying a negative value for $\delta R/\delta G$, it is possible that we observe crowding in, or a positive value for $\delta C/\delta G$. Consider, for example, a nonprofit that receives a matching grant for contributions conditional on providing services at a reduced fare. Such a grant could reduce earned revenues at a level greater than dollar-for-dollar, while simultaneously increasing contributions given donors' reduced price of increasing services.

Even if earned revenues decline with government grants, the effect of government grants on contributions is still uncertain. Suppose the change in earned revenues is bound between 0 and -1. Following Andreoni and Payne's (2003) theory, fundraising decreases with changes in government grants, and a negative sign on $\delta f/\delta G$ offsets some (or all) of the decline in earned revenues. Therefore, under these conditions, $\delta C/\delta G$ must be negative, with the exact value depending on the values of the other two terms.

Harrison and Laincz (2010) suggest that organizations receiving grants in time t but not expecting the continuation of grants, could even attempt to smooth services by shifting more resources to fundraising in time t than they would have had they not received the grant, thus collecting more contributions and increasing service provision in time $t+1$. In this case, $\delta f/\delta G$ is positive, and the sum of the remaining terms must be equal to the absolute value of $(\delta f/\delta G - 1)$.

FOC 2 also provides new insight into old findings. (R. Steinberg, 1986a) classified entire segments of the nonprofit sector as either service or revenue maximizers, depending

whether changes in fundraising increased contributions positively (ideally by 1) or whether the marginal donative product was driven to zero. Omitted from the discussion was whether fundraising could affect earned revenues. It is feasible, however, that fundraising serves dual purposes. Suppose an organization sends out fundraising material that details the services it provides. As information about the organization spreads, the nonprofits' paying clientele may increase, hence creating a positive relationship between fundraising and earned revenues. If $\delta R/\delta f$ is positive, $\delta C/\delta f$ could be less than one, but the organization is still maximizing services.

Reviewing Steinberg's (1986) results, nonprofits classified as Arts, Education, and Welfare were service maximizers, while Health organizations were, on average, budget maximizers. Comparing information on these organizations, however, the author finds that in 2003, Health organizations were more reliant on earned income than were Arts or Education (73% compared to less than 55%). Organizations such as those classified as Health with zero marginal donative products from additional fundraising expenditures may actually recoup all benefits through earned revenues, and therefore could still be viewed as service maximizers.

The third FOC considers the effect of efficiency on other functions in the model. Optimal selection of efficiency occurs when the sum of the effects of efficiency on contributions, government grants, and earned revenues less the effect on fundraising equals zero. The first term, the effect of efficiency on contributions, is often calculated as insignificantly different from zero, suggesting either no effect of efficiency on contributions or that nonprofits are selecting levels of efficiency that maximize contributions only, such that increases in efficiency are not expected to further increase contributions. Whether the

selection of e is actually optimal depends on the values of the remaining terms. A previous essay in this dissertation suggests that for organizations receiving government grants, the value of this term may be positive. This suggests that increases in efficiency are either decreasing earned revenues or increasing fundraising expenses.

The final FOC is perhaps the most controversial. It implies that in order to maximize services, nonprofit organizations should collect program service revenues from beneficiaries until the level that an additional dollar in program service revenue decreases contributions by one dollar. Organizations for this value is positive are not depending enough on earned revenues, and when the value is less than negative one, the organization should decrease the revenues collected from beneficiaries. This theory, however, does not say whether the latter should be accomplished by reducing fees or the number of beneficiaries served.

Each of the first order conditions above presents the opportunity to re-evaluate existing theory and findings. This dissertation, however, focuses only on one piece of the model – contributions. Given the endogeneity of factors involved, attempts are made to estimate the least biased parameters, but future research is necessary to complete the assessments. The following section begins to document the process necessary for unbiased estimation of the determinants of contributions.

Empirical Strategy

Based on the theoretical model described above, private contributions – or direct support – are thought be a function of efficiency, fundraising efforts, government grants, and earned program service revenue. Fundraising during time t is expected to have a direct effect on fundraising. Potential donors are solicited and respond in the same time period. The time frames for the other variables are more complex, but as is often assumed in the existing

research, the response to government funding, earned revenues, and efficiency may be lagged. Potential donors may not know revenue levels and expense allocations during time t , but what occurs in time t could affect subsequent donations in time $t+1$.

When nonprofits post information on their expense allocations, for example, or organizations like the BBB Wise or Charity Navigator assign ratings, these are typically based on the previous years' reports. Granted, many donors are unknowledgeable about the finances of an organization (Horne, et al., 2005), but for those donors who do obtain information, it is likely based on information from time $t-1$. For this reason, contributions are assumed a function of the previous year's earned revenues, government grants, and efficiency measure.

Additional factors may also affect the level of contributions received. Size, for example, may proxy the public's awareness of an organization. There is variation in the literature on the appropriate measure of size, and the choice does have implications for results (Marudas & Jacobs, 2008a). Because we are interested in capturing a measure of an organization's activity, this study includes program expenses as the measure of size.

A parsimonious model, therefore, might take the following form:

$$\text{DirSupp}_{i,t} = B_0 + B_1 \text{FR}_{i,t} + B_2 \text{G}_{i,t-1} + B_3 \text{PSRev}_{i,t-1} + B_4 \text{Price}_{i,t-1} + B_5 \text{Pexp}_{i,t-1} + B_6 \text{Yr}_t + e_{i,t} \quad (\text{EQ } 10)$$

Where $\text{DirSupp}_{i,t}$ represents the direct support, or contributions, to organization i in time t , $\text{FR}_{i,t}$ is fundraising expenditures during time t , $\text{G}_{i,t-1}$ is government grants during time $t-1$, $\text{PSRev}_{i,t-1}$ is the previous time period's program service revenues, $\text{Pexp}_{i,t-1}$ measures the organizations program expenses in the previous time period, and Yr_t represents controls for the time period.

The above model is improved by controlling for time-invariant factors such as mission and location. The adding of a term, u_i , allows us to extract organizational level effects that are correlated with the error terms and time-variant variables included models, generating results less subject to bias. The model then becomes:

$$\text{DirSupp}_{i,t} = B_0 + B_1 \text{FR}_{i,t} + B_2 \text{G}_{i,t-1} + B_3 \text{PSRev}_{i,t-1} + B_4 \text{Price}_{i,t-1} + B_5 \text{Pexp}_{i,t-1} + B_6 \text{Yr}_t + u_i + e_{i,t} \quad (\text{EQ 11})$$

The final step in generating the least biased estimates of our parameters of interest is considering exogenous, “unobserved” factors that may affect both the dependent and right-hand side variables, thus biasing results. The usage of lagged variables is intended to resolve some problems of simultaneity, but one could easily develop scenarios in which this substitution is not a perfect solution. Consider an event like 9/11, where there was a change in demand for particular services that lasted multiple years. Government grants and contributions increase in the current time period, and both remain at elevated levels for several years thereafter. The correlation between government funding in one year and the next is high (0.95), and both may be affected by the same exogenous event. The coefficient for program service revenues may similarly be biased by an exogenous increase in demand. Fundraising is also endogenous if determined in part by government grants and the inflow of contributions.

Instruments for three of the variables, fundraising, program service revenues, and government grants may help to resolve this issue. For example, instrumenting for

government grants allows us to estimate that part of government grants not related to an exogenous increase in demand for services and helps us to better understand the crowding out phenomenon, for example. We further amend the model by including the instrumental variables into the following equation:

$$\begin{aligned} \text{DirSupp}_{i,t} = & B_0 + B_1 \text{FR}_{i,t}^* + B_2 \text{G}_{i,t-1}^* + B_3 \text{PSRev}_{i,t-1}^* + B_4 \text{Price}_{i,t-1} + B_5 \text{Pexp}_{i,t-1} + B_6 \text{Yr}_t \\ & + u_i + e_{i,t} \end{aligned} \quad (\text{EQ 12})$$

The remainder of this paper describes the data used to predict contributions and provides estimates from the models described above, starting with results from the most parsimonious regression (EQ 10), progressing to the inclusion of organizational effects (EQ 11), and lastly, fixed effects instruments (EQ 12) models.

Data

Between the years of 1998 and 2003, the National Center of Charitable Statistics and the Urban Institute in conjunction with Guidestar assembled a detailed dataset on all nonprofits Filing Form 990s with the IRS (National Center for Charitable Statistics, 2003). Unlike the more recent and commonly used Core Files, data during these years includes disaggregated measures of contributions. Financial data distinguishes between private contributions, indirect support (from federations and parent/umbrella organizations), and government grants. (These three measures are also separated in Statistics of Income data, but this dataset is not representative of the population of nonprofits.) Nonprofit organizations with revenues in excess of \$25,000 are required to file Form 990, but extrapolation of results to organizations with revenues below this threshold is not recommended. Across all years in

this data set, more than 335,000 organizations filed Form 990 at least once, for a total of more than 1.3 million observations.

Table 11

Distribution of observations across years

Year	Number of Organizations	Percent of total
1998	179,922	13.82
1999	206,628	15.87
2000	217,000	16.67
2001	229,953	17.66
2002	230,165	17.68
2003	238,276	18.30
Total	1,301,944	

Despite the requirement to submit the Form 990, the lack of taxes, accountability, and a single standard of accounting by nonprofits decreases the likelihood of accurate reporting (Parsons, 2003). For example, although it is possible for organizations to have negative revenues, the frequency with which this occurs suggests that some instances are errors. A series of steps are taken to improve the quality of data used in this analysis.

Observations with negative total expenses, program expenses, or administrative expenses are excluded from the sample. Negative revenues, including government grants, direct support (private contributions), and program service revenue, are also grounds for removal. Further restrictions are imposed on the data, with requirements that the sums of revenue streams and sums of expense streams cannot exceed the respective values of total revenues and total expenses. Table 12 provides greater detail on the number of observations excluded from analysis for these reasons.

Table 12**Excluded Observations**

Reason for Exclusion	Number of Observations	As a percentage of the Population (1.3 million)
Negative Total Revenues	10495	.008
Negative Total Expenses	247	.000
Negative Direct Support	100	.000
Negative Gov. Grants	46	0.000
Negative Prog. Serv. Rev.	520	.000
Negative Administrative Exp.	528	.000
Negative program Expenses	202	.000
Negative Fundraising Exp.	143	.000
Sum of Program and Managerial Expenses > Total Expenses	519	.000
Program Expenses > Total Expenses	521	.000
Grants > Total Revenue	12181	.009
Direct Support > Total Revenue	26127	.020

A number of observations are double counted above. For example, organizations reporting negative total revenues are likely to also appear in those rows with government grants exceeding total revenues and direct support greater than total revenues. In total, the above process removes 29,232, or 2.25 percent, of the more than 1.3 million observations. Because most of these are removed for reasons on the revenues side, a comparison of these organizations to those remaining in the sample must be done using expenses. Both total expenses and program expenses suggest that organizations in the above table, on average, are less than half the size of the average nonprofit organization remaining in the sample.

The sample is further refined by removing those organizations not directly involved in service provision. This includes organizations whose primary purpose is listed as fundraising, grant-making, or philanthropy. The sample is further narrowed by including only

those organizations classified into one of the following major NTEE categories: Arts, Education, Health, and Human Services. Table 13 provides more detail on these excluded organizations.

Table 13
Additional Narrowing of Sample

Reason for Exclusion	Number of Observations	As a percentage of the Population (1.3 million)
Public Foundations	11,544	.89
Level2 = M or S ?	174,292	13.39
Level 3 include Z	143,951	11.06
NTMAJ5= "OT"	301,871	23.19

Again, there is considerable overlap amongst these reasons, with 402,665 observations falling into one of the above rows. Combined with observations removed because of questionable data quality, a total of 416,433 observations are excluded from the sample. The remaining data includes information on 224,798 organizations with 885,511 data points.

The following tables provide information on those organizations remaining the sample. The first table provides information on the four major categories included in this study, the NTEE (National Taxonomy of Exempt Entities) categories classified into each one of these 4, and the number of observations and organizations in each group. The second table provides summary statistics on the financial variables for those organizations/observations, by major category.

Table 14**Description of categories used in the sample**

Major 5 Category	Primary Categories	Organizations	Observations
Arts	Arts, Culture & Humanities	32,461	123,444
Education	Education	48,594	179,120
Health	Health Care; Mental Health & Crisis Intervention; Diseases, Disorders & Medical Disc; Medical Research	36,104	153,020
Human Services	Crime and Legal; Employment; Food, Ag. & Nutrition; Housing & Shelter; Public safety, Disaster Preparedness & Relief; Recreation & Sports; Youth Development; Human Services	107,630	429,546

Most organizations are in the study for more than one year, but in the summary statistics that follow, each observation in the usable sample is included. All monetary values have been converted to real values, with 1982-1984 serving as the base (Bureau of Labor Statistics, 2010).

On average, health organizations are the largest, but due to their reliance on earned revenues, average fundraising expenditures are close to the nonprofit sector's average. Interestingly, Arts organizations, which are smaller than organizations in the other major categories on average, spend a larger percentage on administration than Health, Education, or Human Services.

The four sectors also demonstrate significant variation on the revenues side. Average reliance on private contributions, for example, varies from 2% for Health nonprofits to 39% for the Arts. Despite the huge range, Health organizations, on average, actually receive a little more direct support in absolute terms than do Arts nonprofits. Human Service nonprofits depend more on government grants than other nonprofit categories, and the three categories besides Arts each depend on program service revenues for more than half of their total revenues.

It is important to note, however, that the data below can be misleading. The percentages represent reliance on each source for the subsector, but individual organizations are unlikely to be as diversified as these numbers suggest. Despite growing emphasis on revenue diversification (Carroll & Stater, 2009; Chang & Tuckman, 1991; Hager, 2001), most organizations still rely heavily on one source of revenue. Table 16 provides the 25th and 75th percentiles for the shares of revenue from contributions and program service revenues. Most organizations receive no government grants, and thus the percentiles used are the 75th and the 95th, still with the intention of demonstrating how organizations tend to receive very little from this source or depend almost entirely upon it.

Table 15

Summary Statistics by Major Category

Variable	Arts		Education		Health		Human Services	
	Mean	% of Total	Mean	% of Total	Mean	% of Total	Mean	% of Total
Revenues:								
Total Revenues	\$852,349		\$3,920,434		\$15,100,000.00		\$1,327,283	
Direct Support	\$330,417	39%	\$555,333	14%	\$357,012.00	2%	\$189,525	14%
Government Grants	\$98,483	12%	\$430,430	11%	\$475,146.60	3%	\$312,046	24%
Program Service Revenues	\$241,564	28%	\$2,249,008	57%	\$13,300,000.00	88%	\$667,052	50%
Expenses								
Total Expenses	\$722,950		\$3,365,361		\$14,700,000.00		\$1,293,391	
Program Expenses	\$546,264	76%	\$2,865,589	85%	\$12,600,000.00	86%	\$1,092,811	84%
Fundraising	\$38,873	5%	\$60,925	2%	\$43,128.43	0%	\$19,593	2%
Administrative Expenses	\$122,318	17%	\$421,793	13%	\$1,939,159.00	13%	\$141,433	11%
Number of Obs.	123,444		179,120		153,020		429,546	

Table 16**Dependence on revenue streams evaluated at specified percentiles**

	Direct Support		Program Service Revenue		Government Grants	
	25th	75th	25th	75th	75th	95th
Arts	.16	.79	.00	.55	.05	.50
Education	.01	.69	.00	.77	.00	.74
Health	.00	.83	.00	.95	.07	.86
Human Services	.02	.91	.00	.79	.15	.91

From the above table, we see that one quarter of all Human Service organizations rely on direct support for more than 90% of their total revenues. For Health nonprofits, one quarter receive virtually no program service revenues, while another quarter rely on earned revenues for 95% of their total revenues. While there is some evidence that diversification offers in the Arts and Education based on values for the 75th percentile, Health and Human Service organizations appear much less diversified at the organizational level.

This may have important implications for results both in this paper and previous research. It raises questions of whether the proper divisions for analysis are at the major (or minor) category levels, grouping nonprofits by mission, or whether nonprofits have more in common with organizations with similar revenue compositions, regardless of mission area. This issue is reconsidered later in the paper.

It is from the above data that financial proxies for efficiency, such as price, are generated. Again, price measures the necessary contribution to increase program expenses by \$1 and is typically calculated on average rather than marginal data. Simply stated:

$$\text{Price} = \text{total expenses} / \text{program expenses} \quad (\text{EQ } 13)$$

or the inverse of program expenses as a share of total expenses. If an organization spends 80% of all expenditures on programs, then the price of donating to that organization is \$1.25. Statistically speaking, there is relatively little variation in price. This may be due in part to the data cleaning process, where organizations that do not directly spend on program service delivery are removed. It is also likely that there is pooling of nonprofits at thresholds used by watchdog and rating agencies. Whether organizations are truly maintaining relatively stable program expenses as a percentage of total expenses, or whether accounting data is manipulated to hit targets as anecdotal evidence suggests, is unknown.

To complete the description of data, tables 17-20 provide correlations between the financial variables used in analysis. As expected, even the correlations differ significantly from one major category to the next.

Table 17

Correlation Matrix (Arts)

ARTS	Direct Support	Fundraising Expenditures	Government Grants (lag)	Program Expenses (lag)	Program Service Revenues
Fundraising Expenditure	0.58				
Government Grants (lag)	0.14	0.14			
Program Expenses (lag)	0.71	0.46	0.54		
Program Service Revenue (lag)	0.52	0.44	0.12	0.72	
Price (lag)	0.00	0.02	-0.00	-0.00	-0.00

Table 18

Correlation Matrix (Education)

EDUCATION	Direct Support	Fundraising Expenditures	Government Grants (lag)	Program Expenses (lag)	Program Service Revenues
Fundraising Expenditure	0.85				
Government Grants (lag)	0.77	0.72			
Program Expenses (lag)	0.80	0.83	0.84		
Program Service Revenue (lag)	0.65	0.73	0.68	0.95	
Price (lag)	-0.00	-0.00	-0.00	-0.00	-0.00

Table 19

Correlation Matrix (Health)

HEALTH	Direct Support	Fundraising Expenditures	Government Grants (lag)	Program Expenses (lag)	Program Service Revenues
Fundraising Expenditure	0.77				
Government Grants (lag)	0.17	0.05			
Program Expenses (lag)	0.13	0.09	0.18		
Program Service Revenue (lag)	0.08	0.04	0.13	0.99	
Price (lag)	-0.00	-0.00	-0.00	0.00	0.00

Table 20**Correlation Matrix (Human Services)**

Human Services	Direct Support	Fundraising Expenditures	Government Grants (lag)	Program Expenses (lag)	Program Service Revenues
Fundraising Expenditure	0.78				
Government Grants (lag)	0.12	0.14			
Program Expenses (lag)	0.69	0.84	0.33		
Program Service Revenue (lag)	0.58	0.77	0.12	0.94	
Price (lag)	-0.00	0.00	-0.00	-0.00	-0.00

To reiterate, although the dataset contains numerous financial measures, it lacks proper efficiency measures. Ideally, in constructing the model that follows, we would include some indicator of organizational efficiency. To do so means we need more information on an organization's inputs, outputs, and outcomes. Unfortunately, uniform measures in a dataset of this size are unlikely in the near future.

Results

Having initially estimated models on the full sample (not shown), and comparing these results to more specific subsets of the sample, it was determined that significant differences exist between nonprofit types (NTEE major 5 categories) and years. For that reason, separate models are estimated for four of the five major NTEE categories, Arts, Education, Health, and Human Services, as well as for specific years in the sample. The fifth category, Other, is excluded from this analysis. Due to the number of results presented in this essay, this section is organized in the following manner. First, OLS estimates are

analyzed. Each of the major NTEE categories are presented separately, and comparisons are made across years. Then, comparisons are made between categories. To test the robustness of these results, the next approach follows a similar order but presents results from a fixed effects regression. Finally, instrumental variables as a means for reducing bias caused by potential endogeneity are considered.

OLS results

Table 21 presents OLS results for organizations classified as Arts, Culture, and Humanities nonprofits. As previously mentioned, the yearly estimation demonstrates the variation in the expected effects of each control variable. For example, an increase in fundraising expenses in the current year is expected to increase donations by an amount ranging from just over 2 to just under 4 during the 5 year period for which data was available. The lack of significance on price, the efficiency measure, suggests that contributions during the current year may not be as highly (and negatively) related to prior year's fundraising as expected. The combination of these two factors, therefore, suggests that present fundraising has the most significant effect on current year contributions, and that if there are diminishing marginal returns to fundraising, Arts organizations, on average, are fundraising below a level that is optimal.

The effect of government grants on contributions is also interesting. The results above continue to offer support for the incomplete crowding out hypothesis, although this notion will be further tested later in this paper when we consider government grants as an endogenous variable in the model.

As expected, larger organizations (measured by last year's program expenses) attract greater donations in the current year. More interesting, however, is the negative relationship

between the previous year's earned revenues and this year's contributions. Given the correlation between one year's earned revenue and the next, it is difficult to determine whether individuals are less willing to contribute to nonprofits capable of collecting increasing amounts of earned revenues, or whether nonprofits themselves are turning to earned revenues to compensate for falling contributions.

Table 21

OLS Results (ARTS)

ARTS	(1)	(2)	(3)	(4)	(5)	(6)
	OLS - full sample	OLS - 1999	OLS - 2000	OLS - 2001	OLS - 2002	OLS - 2003
Fundraising	3.027***	3.953***	3.352***	3.924***	2.122***	2.697***
Expenses	(0.027)	(0.048)	(0.044)	(0.093)	(0.046)	(0.040)
Government	-0.545***	-0.570***	-0.390***	-0.860***	-0.443***	-0.474***
Grants (lag)	(0.004)	(0.007)	(0.007)	(0.015)	(0.008)	(0.006)
Program	0.608***	0.574***	0.591***	0.882***	0.521***	0.499***
Expenses (lag)	(0.003)	(0.005)	(0.005)	(0.010)	(0.006)	(0.004)
Prog. Service	-0.507***	-0.554***	-0.473***	-0.949***	-0.318***	-0.396***
Rev (lag)	(0.007)	(0.011)	(0.012)	(0.026)	(0.016)	(0.010)
Price (lag)	-145.463	-127.161	41.447	83.622	-94.820	30.861
	(133.439)	(632.197)	(373.946)	(1,740.864)	(171.115)	(149.006)
Fiscal Year	-26,089.631***					
	(6,852.776)					
Constant	52288149.52***	104,149.78***	78,541.85***	36,213.972	98,293.25***	81,183.18***
	(13713160.692)	(16,435.614)	(15,272.615)	(32,176.40)	(20,449.09)	(13,598.94)
Observations	59719	10269	11498	12322	12634	12996
R-squared	0.68	0.79	0.82	0.62	0.66	0.78

Standard errors in parentheses

* Significant at 10%; ** significant at 5%; *** significant at 1%

As was the case with organizations in the Arts, we find considerable variation in the effect of fundraising on private contributions across the years for Education nonprofits. In 2001, education nonprofits expected almost \$8.00 in direct support for each additional dollar spent on fundraising. This may be due to an influx of donations following 9/11. To test this possibility, the same regression as above for organizations in New York State during 2001 is estimated. Contrary to what I expected (that Education organizations in New York might receive significant, unsolicited contributions, education organizations in this state may over fundraise (coefficient = 0.87 for Education organizations in NY in 2001). Although larger Education organizations are expected to receive more contributions, the effect of size (measured by prior year's fundraising) is not as large in magnitude as it is for Arts Organizations. It is possible that donors contribute to well known Arts nonprofits, but are more likely to give to smaller, local Education organizations.

Table 22

OLS Results (Education)

Education	(1)	(2)	(3)	(4)	(5)	(6)
	OLS - full sample	OLS - 1999	OLS - 2000	OLS - 2001	OLS - 2002	OLS - 2003
Fundraising Expenses	5.706*** (0.035)	5.920*** (0.083)	6.180*** (0.077)	7.778*** (0.089)	4.374*** (0.059)	4.447*** (0.062)
Government Grants (lag)	0.023*** (0.004)	-0.120*** (0.008)	0.176*** (0.010)	-0.110*** (0.012)	0.241*** (0.006)	-0.110*** (0.005)
Program Expenses (lag)	0.242*** (0.002)	0.288*** (0.005)	0.251*** (0.006)	0.202*** (0.007)	0.209*** (0.003)	0.327*** (0.003)
Program Service Rev (lag)	-0.237*** (0.002)	-0.231*** (0.005)	-0.261*** (0.006)	-0.208*** (0.007)	-0.209*** (0.003)	-0.344*** (0.003)
Price (lag)	-41.221 (387.837)	428.334 (1,949.825)	233.930 (2,477.116)	-4,436.049 (3,261.490)	-35.609 (792.412)	4.835 (338.380)
Fiscal Year	-71,405.378*** (10,394.613)					
Constant	1.429e+08*** (20800984.991)	-18,016.494 (34,296.561)	74,115.615** (33,059.050)	42,981.353 (38,638.673)	36,519.077 (25,388.980)	111,456.227*** (23,809.628)
Observations	82080	13847	15646	16821	17457	18309
R-squared	0.81	0.84	0.86	0.76	0.87	0.86

Standard errors in parentheses

* Significant at 10%; ** significant at 5%; *** significant at 1%

The effect of Earned Revenues on contributions to Education organizations is also negative but smaller in magnitude. While people donate less as the nonprofit collects more program service revenue, the smaller coefficient suggests that private donors may be more accepting of this revenue source for Education than Arts organizations.

Finally, the previous year's government grants have an interesting effect on charitable contributions. In some years, there is a moderate, incomplete crowding out. In other years, government grants are associated with an increase in contributions. Again, the varying fiscal years used by nonprofit organizations makes it difficult to determine whether 9/11 had some impact on this coefficient, where some exogenous factor increased both government grants and contributions. Using location in New York to test this possibility (assuming New York received a disproportionate amount of federal funding following 9/11), the author finds an insignificant difference in the coefficient between organizations inside and outside of New York.

Health nonprofits also demonstrate unique patterns. While statistically significant, program service revenues, for example, have a small effect on contributions relative to their impact on contributions for organizations classified as Arts. Size, as measured by program expenses, also appears a less important determinant of private contributions for these organizations than those classified in the previous categories. The effect of present year fundraising is fairly consistent across years, and as was the case in other models, the efficiency measure is insignificant. Most interesting in this set of regressions, however, is the consistent crowding in of private donations by previous year's government grants.

Table 23

OLS Results (Health)

Health	(1)	(2)	(3)	(4)	(5)	(6)
	OLS - full sample	OLS - 1999	OLS - 2000	OLS - 2001	OLS - 2002	OLS - 2003
Fundraising Expenses	4.372*** (0.013)	3.481*** (0.040)	4.144*** (0.025)	4.580*** (0.045)	4.373*** (0.016)	4.328*** (0.018)
Government Grants (lag)	0.184*** (0.004)	0.191*** (0.007)	0.189*** (0.006)	0.177*** (0.015)	0.232*** (0.005)	0.113*** (0.006)
Program Expenses (lag)	0.044*** (0.001)	0.032*** (0.002)	0.039*** (0.002)	0.071*** (0.006)	0.031*** (0.002)	0.064*** (0.002)
Program Service Rev (lag)	-0.038*** (0.001)	-0.027*** (0.001)	-0.035*** (0.002)	-0.061*** (0.005)	-0.026*** (0.002)	-0.057*** (0.002)
Price (lag)	-1.367 (9.942)	1.406 (968.269)	-0.373 (44.464)	-34.046 (2,020.178)	-0.946 (6.379)	-473.746 (6,300.439)
Fiscal Year	-4,065.313 (8,900.008)					
Constant	8175767.179 (17809233.213)	56,136.647*** (20,494.010)	73,613.274*** (19,149.708)	42,804.847 (49,606.042)	-9,205.287 (18,054.756)	68,719.571*** (22,650.458)
Observations	96591	18087	19207	19790	19673	19834
R-squared	0.61	0.36	0.65	0.42	0.85	0.80

Standard errors in parentheses

* Significant at 10%; ** significant at 5%; *** significant at 1%

Table 24

OLS Results (Human Services)

Human Services	(1)	(2)	(3)	(4)	(5)	(6)
	OLS - full sample	OLS - 1999	OLS - 2000	OLS - 2001	OLS - 2002	OLS - 2003
Fundraising Expenses	4.236*** (0.019)	3.464*** (0.023)	2.623*** (0.022)	3.095*** (0.038)	4.752*** (0.027)	-1.371*** (0.039)
Government Grants (lag)	-0.337*** (0.003)	-0.294*** (0.003)	-0.289*** (0.004)	-0.259*** (0.006)	-0.834*** (0.004)	-0.579*** (0.004)
Program Expenses (lag)	0.361*** (0.002)	0.318*** (0.003)	0.315*** (0.003)	0.314*** (0.005)	0.879*** (0.003)	0.639*** (0.003)
Program Service Rev (lag)	-0.360*** (0.002)	-0.284*** (0.003)	-0.295*** (0.003)	-0.320*** (0.005)	-0.697*** (0.003)	-0.647*** (0.003)
Price (lag)	-0.939 (12.935)	-0.422 (6.599)	-419.574 (372.752)	-29.765 (161.296)	3.831 (14.335)	613.708 (668.185)
Fiscal Year	-4,151.201 (3,508.860)					
Constant	8382658.646 (7021567.729)	79,247.385*** (4,601.814)	113,060.235*** (5,562.387)	104,469.590*** (9,540.036)	- 174,123.726*** (7,833.783)	156,904.719*** (7,918.875)
Observations	240988	42178	46643	49427	50833	51907
R-squared	0.65	0.88	0.79	0.57	0.94	0.69

Standard errors in parentheses

* Significant at 10%; ** significant at 5%; *** significant at 1%

Results from Human Service organizations are interesting in that they most closely resemble those from Arts, Culture, and Humanities nonprofits. Government grants generate moderate to high crowding out, and larger organizations, defined as those that spend more on programs, receive greater private contributions. It also appears to be the case that organizations collecting more earned revenues in the previous time period receive lower contributions in the present time. It may be tempting to assume that organizations collecting fees are not soliciting private contributions, but this relationship persists while controlling for total fundraising.

The results above are interesting, but a variety of factors call the results into question. Several terms may be endogenous, and the possibility that omitted factors are correlated with included variables causes further bias in the estimated coefficients. To test these possibilities, the following sections estimate similar models as presented above, but use fixed effects and later instrumental variables to correct for endogeneity.

Panel Estimation

Although fixed effects models control for both observed and unobserved fixed effects, the differences in the models above suggest that separate estimation for the major categories remains necessary. It could also be argued that each variable in the model should be interacted with individual fiscal years, but direct comparison between major NTEE categories is simplified with a more straightforward empirical model. Results are presented in the table below.

Table 25

Fixed Effects Results - A comparison across categories

	(1)	(2)	(3)	(4)
	AR	ED	HE	HU
Fundraising Expenses	1.628*** (0.094)	5.315*** (0.077)	1.776*** (0.075)	17.316*** (0.060)
Government Grants (lag)	-0.020 (0.020)	-0.122*** (0.009)	0.072*** (0.010)	-0.097*** (0.006)
Program Expenses (lag)	0.065*** (0.015)	-0.016*** (0.003)	0.011*** (0.002)	-0.027*** (0.003)
Program Service Rev (lag)	0.213*** (0.027)	-0.013*** (0.004)	-0.006*** (0.002)	-0.136*** (0.004)
Price (lag)	-121.517 (197.019)	11.102 (396.800)	-0.046 (8.349)	0.427 (12.739)
Fiscal Year	-15,088.075* (7,768.678)	-52,901.604*** (9,777.470)	-2,754.250 (7,487.365)	-4,380.296 (3,387.342)
Constant	30473867.294** (15544792.440)	1.064e+08*** (19565247.337)	5729190.922 (14981495.486)	8749839.618 (6778125.885)
Observations	59127	81304	95876	239241
Number of ein	18496	25976	27579	72048
R-squared (within)	0.01	0.09	0.01	0.34
R-squared (between)	0.65	0.42	0.75	0.69
R-squared (overall)	0.53	0.46	0.60	0.60

Standard errors in parentheses. * Significant at 10%; ** significant at 5%; *** significant at 1%

As was the case with the OLS estimates, controlling for organizational fixed effects reveals significant differences between four of the major NTEE categories. Assuming fundraising exhibits diminishing marginal returns, Arts and Health organizations are much closer to achieving levels of fundraising that maximize private (and hence total)

contributions. Human Service organizations and to a lesser extent Education nonprofits can expect to receive significantly greater returns to increases in fundraising, suggesting less-than-optimal fundraising expenses on average for these organizations.

Of the other variables, the only one displaying a consistent pattern across all categories is price, the most commonly tested financial proxy for efficiency. And like the OLS models, the fixed effects models confirm findings from other panel research (Khanna & Sandler, 2000) that suggests private contributions are nonresponsive to changes in this particular measure of efficiency.

Other variables in the model highlight differences between categories and the need for organization-level effects. Consider the variable for size, program expenses. In the OLS models, while the magnitude changes across years and major NTEE categories, the significance and sign remained constant. The panel estimates paint a different picture. While still significant, the magnitude of the coefficients in Table X are smaller than those in previous models, and some of the estimates even suggest a negative relationship between program expenses in the previous year and private contributions in the current year. An Arts organization can expect to attract \$65 more dollars for every thousand it increases program expenses. The same increase for Human Service Organizations is expected to decrease contributions by \$27.

This last result is puzzling, and the extent to which this may have been skewed by organizations such as the American Red Cross whose contributions and expenses may be cyclical, Human Services is re-estimated for all Human Service Organizations except those classified as P21–American Red Cross. Results are presented in Table 26. The expected effect of prior year's program expenses is now not only positive but far exceeds the

magnitude of the other categories. Specifically, an additional one thousand dollars spent on program expenses in the previous year by Human Service nonprofits excluding the Red Cross is expected to increase current year's contributions by \$539. The differences between the results in Table 25 and 26 suggest the need for further disaggregation, an area for future research.

Table 26

Fixed Effects on Human Service Organizations (excluding Red Cross)

	HU
Fundraising Expenses	2.297*** (0.044)
Government Grants (lag)	-0.509*** (0.003)
Program Expenses (lag)	0.539*** (0.002)
Program Service Rev (lag)	-0.555*** (0.002)
Price (lag)	0.954 (6.384)
Fiscal Year	-2,949.038* (1,700.370)
Constant	6012739.532* (3402392.361)
Observations	239231
Number of ein	72043
R-squared (within)	0.36
R-squared (between)	0.61
R-squared (overall)	0.55

Standard errors in parentheses. * Significant at 10%; ** significant at 5%; *** significant at 1%

Comparing the effects of government grants in the above tables also demonstrates the diversity of contribution determinants within the nonprofit sector. Arts organizations, as a group, seem unaffected by the receipt of government grants. The same grant, however, is

expected to attract additional private contributions to Health organizations. A real \$1000 increase in government grants is expected to increase reported private contributions by \$72. Education and Human Service organizations, however, demonstrate incomplete crowding-out in a magnitude similar to the average found in other studies (Tinkelman, 2010). By removing five Red Cross organizations from the sample, however, Table 26 suggests that for every two dollars received in government grants, private contributions to the remaining Human Service organizations fall by more than \$1.

Finally, we find that while controlling for other factors, increasing prior year's earned revenues decreases current year's contributions for all major categories of nonprofits presented in this paper with the exception of Arts. As Arts organizations increase their earned revenues, contributions also increase. This may result from the nature of services provided by Arts organizations, where patrons paying for services are also enticed to donate additional funding. For the other categories, actual beneficiaries and donors may be two distinct groups, and therefore, the more that the beneficiaries can self-finance, the less the donors are willing to give. Again, it is difficult to separate out the extent to which earned revenues fill gaps created by declining contributions or contributions decline as a result of organizations seeking the more stable earned revenues (Kerlin & Pollak, 2010). This is another area worthy of continued research.

Originally, scholars speculated that nonprofits resorted to earned and commercial revenues as a means of replacing lost government and private contributions. This suggests a decline in contributions precedes changes in commercial revenues. Empirically, this idea remained largely untested until recently. Kerlin and Pollack (2010) find increasing reliance on commercial revenues, regardless of prior changes in contributions. Results in this paper

suggest contributions for some types of organizations are expected to decline *following* increases in earned revenues. Together, these two papers present implications counter to the scholars' earlier hypothesis. It could be the case that nonprofits fear a drop in contributions and thus place greater emphasis on earned revenues, but the drop in contributions (or grants) fails to materialize. Greater emphasis on earned revenues, even when controlling for fundraising, discourages private contributors, and thus the subsequent fall in contributions becomes a self-fulfilling prophecy for such nonprofit organizations.

To test this idea, Table 25 is replicated, but this time an interaction term between fundraising and lagged real program service revenues is included. If this idea is correct, that donors may be turned off by increasing earned revenues, we should find a negative sign on the interaction variable. It suggests that the return to an additional dollar on fundraising is lower for organizations generating more in earned revenues. This also implies that earned revenues have a larger (in terms of magnitude) effect on private contributions when a nonprofit engages in larger fundraising, *ceteris paribus*. Results are presented in Table 27. Interestingly, the interaction term is positive in all 4 major NTEE categories, although the magnitude suggests any true interaction effect is close to zero. (Note that the HU column now excludes 5 American Red Cross organizations.)

Table 27

Fixed Effects Results with Fundraising and Program Service Rev. Interaction

	(1)	(2)	(3)	(4)
	AR	ED	HE	HU
Fundraising Expenses	1.310***	4.159***	1.590***	2.101***
	(0.095)	(0.108)	(0.078)	(0.046)
Government Grants (lag)	-0.002	-0.138***	0.056***	-0.511***
	(0.020)	(0.009)	(0.010)	(0.003)
Program Expenses (lag)	0.012	-0.014***	0.010***	0.541***
	(0.015)	(0.003)	(0.002)	(0.002)
Program Service Rev (lag)	0.043	-0.035***	-0.007***	-0.560***
	(0.029)	(0.004)	(0.002)	(0.002)
Price (lag)	-0.417	10.033	-0.045	0.954
	(196.094)	(395.976)	(8.344)	(6.381)
Fiscal Year	-11,367.397	-44,991.679***	-1,302.135	-2,751.350
	(7,730.818)	(9,771.002)	(7,484.755)	(1,699.448)
Fundraising (lag)	0.000***	0.000***	0.000***	0.000***
* Prog. Serv. Rev (lag)	(0.000)	(0.000)	(0.000)	(0.000)
Constant	23129933.097	90752918.412***	2859911.196	5620537.659*
	(15468923.012)	(19551741.986)	(14976185.089)	(3400545.116)
Observations	59127	81304	95876	239231
Number of ein	18496	25976	27579	72043
R-squared	0.02	0.10	0.01	0.36

Standard errors in parentheses; * significant at 10%; ** significant at 5%; *** significant at 1%

Instruments

Up to this point, the results are interesting to interpret, but to begin to draw causal arguments, it is necessary to distinguish correlation from causation. Accounting for fixed effects begins this process in the above models, but some endogeneity may remain. Consider the variable, program service (earned) revenues. Although lagged in the model, the theory

presented earlier suggests that it may also be a function of government grants, fundraising, and efficiency, also from the lagged year. Although lagged fundraising is not included in the model, current and lagged fundraising are significantly correlated (0.976), and the other two variables are also considered as determinants of contributions (although the efficiency measure fails to prove significant in any specification). Fundraising may also be endogenous, as its value may depend upon the level of revenues received from sources such as the government. Andreoni and Payne (2003) suggest that incomplete crowding out may result from a change in fundraising strategies by nonprofit organizations. As organizations increase their receipts of government funds, they decrease their level of fundraising, and hence collect less money. If nonprofits financial resources are fungible, however, it could be the case that nonprofits receiving government funding are able to increase their fundraising endeavors, hence masking crowding out that may have occurred had fundraising remained at pre-government funding levels. Finally, government funding may be responsive to changes in an organization's efficiency. The previous chapter in this dissertation asserts that the level of government funding received by an organization generally increases as organizations become more efficient, although this effect varies considerable across efficiency measure and the mission of the nonprofit.

The following methods are used to predict less biased estimates and test the robustness of previous results. First, we consider using instruments comparable to those used by Andreoni and Payne (2003). While these authors used NIH funding in a model estimating the impact of government grants on fundraising, I instead instrument with new (as opposed to continuation) NSF funding to higher education in an organization's metropolitan area, as determined by zip code. Additional instruments unique to individual organizations are then

tested. I instrument for lagged government grants using a twice lagged measure of fundraising expenses and lagged earned program revenues by the twice-lagged managerial expenses. Changes in fundraising during previous years may signal efficiency to the government, and changes in managerial expenses may indicate a shift towards more business-savvy administration, thus foreshadowing an increase in earned program revenues exogenous from any increase in demand for services that would increase government, earned revenues, and contributions simultaneously.

Table 28 includes estimates for the first and second steps when NSF funding is used as an instrument. While Andreoni and Payne (2003) used a longer sample and aggregated NSF funding at the state level, the author attempts to calculate a more accurate measure by aggregating NSF funding at the MSA level. Unfortunately, this measure is a poor instrument in each of the four major categories considered. In all 4 cases, new NSF grants to an area fails to prove a significant determinant of government grants when controlling for individual fixed effects. Additional measures were then tested, including continuing grants, total grants, average grant size, and state level departmental budgets (not shown). Unfortunately, each of these yielded results similar to the NSF data presented. They were poor predictors of government grants, and results in the second stage are therefore unreliable.

Table 28

Fixed Effects and Instrumenting with NSF Funding

	(1)	(2)	(3)	(4)
	AR	ED	HE	HU
Government Grants (lag)	0.561 (7.183)	-4.648 (2.916)	-0.254 (1.215)	-1.071 (1.541)
Fundraising Expenses	1.904 (2.024)	9.242*** (2.948)	0.944*** (0.287)	0.863 (1.169)
Program Expenses (lag)	-0.147 (1.170)	-0.565 (0.384)	0.042 (0.081)	0.283 (0.315)
Program Service Rev (lag)	0.478 (1.408)	0.723 (0.530)	-0.020 (0.055)	-0.441 (0.288)
Price (lag)	-1,636.693 (1,586.152)	-51.870 (1,037.897)	-0.050 (12.952)	1.044 (9.061)
Fiscal Year	-57,443.833 (45,045.998)	112,916.531 (135,181.295)	-25,558.282 (60,657.698)	31,254.202 (28,650.267)
Constant	1.153e+08 (89753564.114)	-2.231e+08 (2.692e+08)	51423777.090 (1.211e+08)	-6.192e+07 (56894657.264)
Observations	35033	49244	54677	139196
Number of ein	16172	22848	23994	62799
	(1)	(2)	(3)	(4)
	AR	ED	HE	HU
First Step New Grants (\$, lag)	-0.000 (0.000)	0.001 (0.001)	0.002*** (0.001)	0.000 (0.000)
Fundraising Expenses	0.281*** (0.028)	1.006*** (0.059)	-0.204*** (0.036)	-0.758*** (0.042)
Program Expenses (lag)	0.163*** (0.005)	-0.132*** (0.003)	0.066*** (0.001)	0.204*** (0.002)
Program Service Rev (lag)	-0.196*** (0.009)	0.182*** (0.003)	-0.045*** (0.001)	-0.187*** (0.002)
Price (lag)	30.190 (260.763)	-11.144 (222.146)	-0.020 (3.192)	0.510 (7.056)
Fiscal Year	6,640.770 (4,043.170)	37,844.645*** (10,286.495)	39,723.446*** (6,249.113)	17,732.730*** (2,766.285)
Constant	-1.322e+07 (8091477.713)	-7.529e+07*** (20586420.590)	-7.925e+07*** (12506846.089)	-3.520e+07*** (5536520.824)
Observations	35033	49244	54677	139196
Number of ein	16172	22848	23994	62799
R-squared	0.05	0.17	0.11	0.16

Standard errors in parentheses. * Significant at 10%; ** significant at 5%; *** significant at 1%

The organization-specific instruments in the second analysis prove more beneficial for assessing causality. We begin by instrumenting for government grants and program service revenue. Results are presented in Table 29. In each of the four categories, the proposed instruments meet the requirements for good instruments. Theoretically, they are not directly related to the variable of interest, in this case, private contributions and are significant predictors of lagged government grants and program service revenues. Both instruments are usually significant, but when only one of the instruments is significant in the first step regression, it is the one proposed as the instrument for that particular endogenous variable.

Table 29

Fixed Effects and Instruments for Government Grants and Program Service Revenues

	AR		ED		HE		HU	
Government Grants (lag)	-5.551***		-0.460***		1.354		-1.051***	
	(1.096)		(0.092)		(1.166)		(0.243)	
Program Service Rev (lag)	0.129		0.135***		-0.043		-0.399***	
	(0.665)		(0.022)		(0.036)		(0.032)	
Fundraising Expenses	5.686***		3.180***		2.107***		2.694***	
	(0.499)		(0.215)		(0.264)		(0.181)	
Program Expenses (lag)	0.936***		-0.152***		0.029		0.460***	
	(0.356)		(0.021)		(0.039)		(0.042)	
Price (lag)	95.474		-2.716		0.045		1.862	
	(436.069)		(455.344)		(10.841)		(13.803)	
Fiscal Year	-27,473.0		-56,018.140***		-57,059.0		8,809.9*	
	(22963.8)		(16319.7)		(50455.4)		(5313.0)	
Constant	55162,163		1.133e+08***		1.14E+08		-1.7E+07	
	-45964618		-32663414		-1.01E+08		-10576215	
Observations	41191		55691		67237		166769	
Number of ein	15557		21522		24002		61454	
First Stage	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	AR_gov	AR_psr	ED_gov	ED_psr	HE_gov	HE_psr	HU_gov	HU_psr
Fundraising Expenses	0.619***	-0.930***	1.774***	-2.397***	-0.234***	0.849***	-0.159***	-4.293***
	(0.030)	(0.021)	(0.057)	(0.108)	(0.034)	(0.218)	(0.043)	(0.071)
Program Expenses (lag)	0.155***	0.307***	0.081***	0.857***	0.013***	0.942***	0.108***	0.547***
	(0.004)	(0.003)	(0.001)	(0.002)	(0.000)	(0.002)	(0.001)	(0.002)
Price (lag)	42.261	-59.057	5.779	54.366	-0.110	-2.337	0.628	2.124
	(62.750)	(43.145)	(228.227)	(431.762)	(2.612)	(16.790)	(9.268)	(15.354)
Fiscal Year	-1,130.76	1,474.988	3,348.336	-16,594.34	40,332***	223,727***	18,701***	-3,376.5

	(3,319.6)	(2,282.5)	(8,164.144)	(15,445.0)	(3,514.57)	(22,592.6)	(2,066.53)	(3,423.4)
Fundraising Expenses (Twice lagged)	0.283***	-0.791***	1.296***	-1.577***	-0.087***	-0.565***	-0.281***	-0.099
	(0.048)	(0.033)	(0.061)	(0.116)	(0.025)	(0.163)	(0.048)	(0.079)
Administrative Expenses (Twice lagged)	0.130***	-0.053***	-0.056***	-0.289***	-0.001	0.167***	-0.145***	1.278***
	(0.017)	(0.012)	(0.004)	(0.008)	(0.001)	(0.009)	(0.013)	(0.021)
Constant	2203303.4	-2721394	-6704685.7	33480667	-8e+07***	-4.5e+08***	-3.7e+7***	6733727
	(6643789.675)	(4568105.382)	(16340316.946)	(30912793.544)	(7034128.156)	(45217187.899)	(4136043.240)	(6851818.058)
Observations	41191	41191	55691	55691	67237	67237	166769	166769
Number of ein	15557	15557	21522	21522	24002	24002	61454	61454
R-squared	0.07	0.58	0.17	0.88	0.06	0.89	0.07	0.48

Standard errors in parentheses. * Significant at 10%; ** significant at 5%; *** significant at 1%

In the case of Arts nonprofits, we find that crowding out occurs with a much larger magnitude than previously estimated. The results suggest that an additional dollar of government grants may decrease contributions by more than \$5.55, a figure that far exceeds that in most research. Earned program revenues loses significance after instrumentation, suggesting that controlling for other factors, including unobservables that do vary with time such as a demand for a nonprofit's services, this revenue source does not significantly affect private contributions.

Results from the first step are also worthy of discussion. The instruments are statistically significant, but not necessarily in the directions predicted. Government grants are positively impacted by managerial expenses, a result anticipated following earlier research (previous chapter). Previous fundraising, however, is a positive predictor of government grants. Given the often inverse relationship of fundraising and efficiency measures, one might be more inclined to think an increase in a previous year's fundraising would lower efficiency, and hence decrease government grants. The key to understanding this finding, however, may lay with the exogenous variables in the model. Specifically, we are controlling for future fundraising expenses, relative to the lagged government grants. While direct interpretation of this coefficient is not important, the inclusion of this variable suggests that the greater the twice lagged fundraising, the less the increase from past to future – with the difference even being a decline in fundraising. It may not be the level of fundraising that is theoretically important, but the change in fundraising from one year to the next that concerns the government. Therefore, controlling for future fundraising, the greater the past fundraising, the greater the possibility of a decrease in fundraising expenses, and thus the increase in government grants.

Interpreting managerial expenses is also interesting. Simple correlations between lagged managerial expenses and program service revenues in the Arts are positive (0.68), but the results from the fixed effects model suggest a negative statistical relationship.

Contradictory to my original hypothesis with this variable, Arts organizations are not investing in managerial expertise to increase their ability to generate earned revenues, but such investment does appear significantly related to government grants.

The results from Education organizations also suggest that crowding out may be more significant for nonprofit organizations than suggested by the first panel estimates, although for these organizations, crowd out is still incomplete. The instrumentation of program service revenues also generated interesting results. Despite explaining the vast majority of earned revenues for Education organizations (R-squared within of .88), the effect of program service revenues changes from slightly negative in the first estimation to positive and moderate in magnitude in the latest estimation. A \$1000 increase in earned revenues is now expected to increase private contributions by \$135. Given the significance of higher education in the education category, this finding is not surprising, and further research is necessary to determine the robustness of these findings across different types of education nonprofits.

In the first step, we again find that lagged fundraising positively affects government grants, but in this case, managerial expenses decrease both government grants and program service revenues. Given the control for size (program expenses), increases in administration as a share of total expenses increases government grants for Arts but decreases the government grants for Education. This highlights the differences in expectations between revenue sources for different types of nonprofit organizations.

Health nonprofits exhibit a different pattern than Arts or Education in that after instrumentation, neither government grants nor program service revenues are expected to significantly affect private contributions. For these organizations, the only significant determinant of contributions is fundraising expenditures. The first step regressions, however, provide another unique insight into our instruments. In predicting lagged earned service revenues, this is the first instance in which managerial expenses are associated with increases in earned revenues. Health care organizations may be investing in administration with the intent of increasing earned revenues.

The Human Service category, the final of the four major categories analyzed in this paper, presents interesting results that differ from the previous categories. (Again, this estimation excludes 5 organizations classified as P21 – American Red Cross). Crowding out by government grants is estimated at 1.05, giving the closest estimate to perfect crowding out in the paper thus far. Specifically, by removing the variation in government grants that may fluctuate simultaneously with private contributions from an unobserved factor, we now find that an increase in government grants of \$1 is expected to decrease private contributions by \$1.05.

The estimation of government grants in the first step suggests the expected relationship between lagged fundraising and government grants. While not the only category to exhibit this pattern (also negative and significant for Health), the magnitude in this case is significantly larger than in the other instance.

Nonprofits in this category are also the only group to display a negative relationship between earned program service revenues and private contributions, *ceteris paribus*. A \$1000 increase in earned revenues decreases contributions by close to \$400. In the

prediction of earned revenues, we find that managerial expenses has a significantly larger effect than it did in the other categories, where a \$1000 increase in the previous year's managerial expenses is expected to increase program service revenues by \$1278.

Having already instrumented for government grants and program service revenue, there is one more possibly endogenous variable in the model – fundraising expenditures. If fundraising expenditures are decided at the beginning of a fiscal year based upon last year's revenues, expenses, and projections for the coming year, then the variable as a determinant of private support is exogenous. Endogeneity, however, may be likely if nonprofit organizations adjust their fundraising expenses during the year due to some unanticipated increase in demand for services, or in response to higher or lower than expected contributions. For example, suppose an organization tends to collect \$1 million dollars during the first half of the fiscal year. Due to economic conditions, the organization collects only \$700,000. The organization may re-evaluate their fundraising strategies, even increasing their fundraising expenditures hoping to make up the difference.

Table 30

Instruments for Government Grants, Program Service Revenue and Fundraising (2nd stage results only)

	(1)	(2)	(3)	(4)
	AR	ED	HE	HU
Government Grants (lag)	-3.435***	-1.213***	1.905	-1.196***
	(0.849)	(0.177)	(1.976)	(0.258)
Program Service Rev (lag)	4.031***	0.038	-0.037	-0.409***
	(0.728)	(0.030)	(0.036)	(0.034)
Fundraising Expenses	13.852***	10.244***	2.023***	3.199***
	(1.778)	(1.048)	(0.610)	(0.426)
Program Expenses (lag)	-0.251	0.012	0.017	0.480***
	(0.282)	(0.037)	(0.045)	(0.045)
Price (lag)	-398.037	13.037	0.118	1.977
	(416.097)	(532.719)	(11.323)	(14.418)
Fiscal Year	-52,453.813**	-101,278.321***	-79,887.031	10,589.077*
	(21,912.688)	(19,852.915)	(80,002.313)	(5,534.724)
Constant	1.038e+08**	2.032e+08***	1.595e+08	-2.086e+07*
	(43810708.713)	(39711106.045)	(1.594e+08)	(11017850.119)
Observations	41191	55691	67237	166769
Number of ein	15557	21522	24002	61454

Standard errors in parentheses. * Significant at 10%; ** significant at 5%; *** significant at 1%

With the third instrument included, there is evidence of significant crowding out in three of the major categories, Arts, Education, and Human Services. In the cases of Education and Human Services, the crowding out is close to the one-to-one crowding out theory predicted but most empirical studies failed to find. Controlling for fundraising expenses (and assuming expenses reflect efforts), nonprofit organizations in these categories may expect a decline in contributions as government grants to the organization increase.

Results for Arts organizations suggest a crowding out significantly larger than dollar for dollar. In this case, an additional dollar in government grants, *ceteris paribus*, is expected to decrease private contributions by more than \$3. Awareness of growing government support to these organizations may decrease private contributors' desires to privately fund these organizations.

Program Service Revenue, in this model, significantly affects expected contributions for Arts and Human Service organizations, but less so for Education and Health. Arts organizations can expect an increase in contributions as program service revenues increase, *ceteris paribus*. One could develop a plausible story about the nature of service provided by Arts organizations, the dual role of individuals as donors and recipients, externalities, and significant differences between private value and admissions prices. As a museum or the popularity of a performing arts group increases, more individuals patron these nonprofits, and these same individuals then make private contributions to these organizations above the required admissions price.

Of the four categories, donors and beneficiaries in Human Services may be the most mutually exclusive group and services can largely be considered redistributive in nature. This may explain the negative relationship between program service revenues and private contributions in this category. A one thousand dollar increase in program service revenues is expected to decrease private contributions by \$409, *ceteris paribus*.

Finally, returns to fundraising may be much larger than expected, once we control for organizational effects and the variable's possible endogeneity. For Arts organizations, for example, an additional dollar in fundraising is now expected to increase private contributions by more than \$13. This relationship, while still statistically significant, is much smaller in

magnitude for the categories of Human Services and Health, where additional fundraising may only generate \$2-\$4 per additional dollar spent.

The following table compares magnitudes and significance across several of the models and categories. It includes statistically significant coefficients from the OLS models, the fixed effects models, the case in which we instrumented for government grants and program service revenues (Instrument 2), and finally, when fundraising is included as a third endogenous relationship (Instrument 3).

Table 31

Comparison of Significant Results across Categories and Specifications

		OLS (pooled)	Fixed Effects	Instrument (2)	Instrument (3)
ARTS	government	-.545	-	-5.551	-3.435
	Program Serv. Rev.	-0.507	.213	-	4.031
	Fundraising	3.027	1.628	5.686	13.852
Education	government	.023	-.122	-0.460	-1.213
	Program Serv. Rev.	-0.237	-.013	0.135	-
	Fundraising	5.706	5.315	3.180	10.244
Health	government	.184	.072	-	-
	Program Serv. Rev.	-0.038	-.006	-	-
	Fundraising	4.372	1.776	2.107	2.023
Human Services (ex P21 in cols 2- 4)	government	-0.337	-.509	-1.051	-1.196
	Program Serv. Rev.	-0.360	-.555	-0.399	-0.409
	Fundraising	4.236	2.297	2.694	3.199

Comparing the various empirical techniques provides us the opportunity to better see patterns in the data. For example, we find that instrumentation increases the magnitude of

crowding out, or in the case of Health, earlier estimates of crowding-in are no longer present. Depending on the classification of an organization, crowd-out from an increase in government grants may decrease private contributions from zero to over \$3, an estimate that exceeds most previous research (Tinkelman, 2010).

Focusing on Arts organizations, estimates of crowding out vary from just over 50 cents on the dollar to \$3.43 per dollar increase of government grants. Program Service Revenues were initially correlated with a decline in direct support, but once organizational fixed effects were included in the model, increases in earned revenues are generally assumed to increase private contributions (in 2 of the three estimations). Fundraising, assuming subject to diminishing returns, falls significantly short of its revenue maximizing level in each of the models.

The change in parameters for Education is also interesting. Without fixed effects, the pooled OLS model suggested that increases in government grants may have attracted increased contributions. Again, once we include fixed effects, crowding out is expected at levels between -0.12 to -1.2. Again, these results suggest that partial crowd out is likely, but complete crowding may also be occurring once we correct for factors potentially biasing results. The effect of earned program service revenues on contributions to Education organizations is a bit more ambiguous. Further research on this issue is warranted, specifically the separation of organizations such as nonprofit higher education that may be skewing results.

Health organizations are unique in that, as a whole, they do not appear subject to crowding-out or crowding-in. When significant, the magnitude of this coefficient is relatively low, and once fixed effects and instruments are included, the estimated parameter

is statistically insignificant from zero. Again, it is difficult to determine whether these results are biased by large, nonprofit hospitals, whether donors are unaware of government funding to nonprofit organizations in this category (i.e. [Horne, et al., 2005; Van Slyke & Roch, 2004]), or whether crowd-in and crowd-out effects perfectly cancel one another out. Program Service Revenues follow a similar pattern, small in magnitude when significant, but insignificant all together in the last two estimation techniques. Nonprofits falling into this category are also expected to have the lowest return to changes in fundraising, with estimated effects as low as \$1.78 per each additional dollar allocated to fundraising expenses.

Finally, Human Service organizations (still excluding P21 – American Red Cross), exhibit the tightest estimates of crowding out, with parameters ranging from -0.34 to -1.2. Overall, increasing public support of a nonprofit Human Service organization decreases contributions by private donors in subsequent time periods, evidence that these organizations may be considered more of the pure public good and subject to traditional theories of crowd-out in the sector. It is also possible that Human Service nonprofits, although covering a wider range of industries than some of the other major 5 categories, may consist of organizations that are in many respects, more similar in missions to assist those less fortunate. This is further exhibited by estimates on the effect earned program revenues, which suggest that a one dollar increase in this revenue source causes an expected decline in private contributions between 0.36 and 0.56 cents.

What may explain these findings? The missions and services offered by each category likely accounts for much of the cross-category variation. Consider the relationship between beneficiaries and prospective donors. Young et. al. (2010), for example, use these two variables in combination to determine the extent to which organizations are public or

private. In the case of Arts organizations, one could argue, as already mentioned, that donors comprise a significant portion of service beneficiaries. The exact opposite is true for Human Services, where many of the services are redistributive in nature. Education and Health fall somewhere in the middle. Alumni donating to a nonprofit college, for example, are previous recipients of services, but their support is now more redistributive in nature. A parent donating to her child's school, however, is more likely a direct beneficiary of her donation.

First consider the Arts, where donors may also be patrons. Although certain art forms may resemble public goods, an individual is ultimately concerned with his own consumption. He wants to enjoy a holiday classic like the *Nutcracker*, and is less concerned with who funds it than whether he has a seat. If the government contributes to a local performing arts troupe, and the *Nutcracker* is scheduled, the individual may be less inclined to donate privately to the troupe.

Human Service nonprofits provide services that may not be as public in nature as certain types of art. A bed at a homeless shelter, for example, is a rival good. Generally speaking, donors to Human Service Organizations are also unlikely to be direct beneficiaries, with Recreation and Sports nonprofits perhaps being the exception to the rule. For these organizations, we again observe crowding out, but the most interesting finding is the relationship between earned program service revenues and contributions. It appears that donors, observing that an organization is collecting more revenues directly from beneficiaries (or third party payers), are less inclined to financially support the organization through private contributions. When donating to a Human Service organization, donors may be motivated by the thought of helping those less fortunate. The more this group can self-

support, the lower the utility increase of a prospective donor with each dollar donation, hence aggregate contributions decline.

Health arguably includes the most diverse group of nonprofits with respect to the nature of services provided. It includes large hospitals, community health clinics, mental health and substance abuse treatment programs, and medical research. Consider a category such as medical research, where value is assessed by advances in scientific knowledge. Increases in financial support by government when no cure is found may not deter private contributors interested in supporting the organization to find a cure or discover new treatments. This may differ from a community health clinic serving a particular neighborhood. If government funds increase and are now sufficient to maintain needed day to day operations, donors may feel their contributions are no longer needed at this particular organization. The diversity in this category may explain the lack of significant findings on crowding out and program service revenue, and hence a further disaggregation of this category may be most warranted.

Re-division of Nonprofit Organizations

While it is possible that we need further disaggregation of categories to create groups of nonprofits with greater similarity in mission, the opposite was suggested earlier in this paper. Perhaps groupings should depend less on mission and more on similarities in revenue structures. Nonprofit hospitals and universities, for example, may have more in common than the same hospitals compared with community family planning clinics in lower income areas. Table 32 presents results for the same model as estimated in Table 30 but groups organizations based on their dependence on particular revenue streams rather than mission.

Table 32

Classification by Major Revenue Stream

	(1)	(2)	(3)
	Contribution Share >.8	Program Service Rev. Share >.8	Government Grant Share >.8
Government	-1.634***	-0.340***	1.158
Grants (lag)	(0.256)	(0.043)	(3.594)
Program Service	-0.574***	-0.012**	0.473
Rev (lag)	(0.051)	(0.005)	(1.555)
Fundraising	-1.393	0.206	-2.851
Expenses	(1.085)	(0.827)	(18.082)
Program Expenses	0.639***	0.017***	-1.208
(lag)	(0.049)	(0.005)	(3.690)
Price (lag)	0.593	-0.050	-4.159
	(24.702)	(1.610)	(16.966)
Fiscal Year	70,897.814***	-2,193.220	-17,178.468
	(18,864.087)	(2,574.045)	(59,022.930)
Constant	-1.405e+08***	4526475.245	34501132.306
	(37642469.956)	(5138483.427)	(1.182e+08)
Observations	117062	105979	29758
Number of ein	52482	43462	13723

Standard errors in parentheses; * significant at 10%; ** significant at 5%; *** significant at 1%

For organizations that depend almost entirely on government grants, the variables studied thus far explain little of the variation in their contributions from year to year. The same variables, however, offer the most explanatory power for those organizations that rely most heavily on contributions. For example, government grants are expected to crowd out significantly more donations to organizations that depend almost entirely on contributions, with a one dollar increase in government grants expected to decrease direct support by \$1.63. Crowd-out occurs for those organizations that rely mostly on program service revenues, but for these organizations, the crowd-out is incomplete. Program service revenues also have a larger effect on organizations most dependent on contributions. A one dollar increase in this

revenue stream is expected to decrease contributions by more than 57 cents, again much larger than the negligible one cent decline in organizations predominantly relying on program service revenues. Fundraising has no effect on contributions once we separate nonprofits based on their primary sources of revenue, a surprising finding. What we should take from the above is that the determinants of contributions may vary based on the level of support an organization receives from specific revenue streams. Organizations most dependent on contributions appear most affected by changes in the determinants analyzed in this paper.

Specification

Although panel data offers one of the best means for controlling for time-invariant unobservables, differences in estimation techniques may have implications for the consistency and efficiency of the predicted coefficients. For this reason, models were compared using Hausman's specificity test. First, in comparing the fixed effects results with random effects models, results from the Hausman test suggest that the random effects estimates are inconsistent, and therefore should be rejected in favor of the fixed effects estimates. A second round of tests compared the fixed effects results with predictions from the instrumental variable approach. If the coefficients from the two models are not systematically different, then the fixed effects results are presumed consistent and more efficient than those from the instrumental variable fixed effects models. For each of the four major categories, we cannot reject the null that the differences between the models are not systematic and therefore, the instrumental approach is determined more consistent (Hausman, 1978).

Conclusion

Research on the determinants of contributions to nonprofit organizations has largely been compartmentalized, with researchers focusing on one of two issues. Either researchers want to assess the effect, if any, that financial proxies for efficiency have on charitable contributions. Or, they attempt to measure a causal relationship between the receipt of government grants and private contributions. To date, advances in these two methods have not been combined. Adding to the contribution of this particular essay is the inclusion of earned program service revenues. Researchers assumed program service revenues increase as a result of falling contributions, but this essay instead proposes that potential donors may respond to changes in an organization's ability to collect revenues directly from service recipients.

Four of the five major NTEE categories are included in this analysis, Arts, Education, Health, and Human Services. Considerable differences in the types of nonprofits included vary both within and across these categories. For example, it is suggested that for Arts organizations, more than the other categories, there is a greater overlap between private donors and service recipients. These groups are assumed most mutually exclusive for Human Service nonprofits. The diversity in Education and Health place these categories in the middle.

It is the two extremes, Arts and Human Services that exhibit the most consistent patterns of crowding out. Estimates for crowding out in the last instrumental variable fixed effects approach place crowd-out between 0 (a statistically insignificant level) for Health to as much as \$3.44 for the Arts. The remaining two categories, Education and Human

Services, each have estimates that are not statistically different from 1, suggesting almost perfect, one-for-one crowd out for these organizations, on average.

The same two extremes also seem most affected by earned program service revenues, although the relationship is not as consistent. For Arts organizations, two of the three fixed effects models suggest that contributions increase by an amount between 0.2 and 4 dollars per dollar reported as earned program service revenue. The same revenue source negatively affects donations to Human Service organizations, but this effect is better refined and expected to fall between 0.36 and 0.56 for each dollar in earned revenue.

Division of nonprofits by dominant revenue stream suggests that the organizations reliant on contributions are more sensitive to changes in government grants and program service revenues than other organizations, *ceteris paribus*. Estimates of government crowd-out exceed one, and increases in program service revenues also have significant negative effects on direct support, reducing estimated direct support by more than fifty cents per dollar. Further research is needed into how the determinants of contributions might vary by other characteristics such as organizational size or levels of fundraising, in addition to further disaggregation.

As in other studies employing fixed effects, the efficiency measure of price is determined to have no significant effect on contributions. Previous theories that individuals may not be aware of changes in an organization's resource allocation (or simply do not care) are generally supported. Other reasons for this funding could include the lack of variation in this measure within an organization. Whether organizations aim for specific targets and accomplish these or manipulate their accounting reports to reflect consistently hitting these targets is unclear from this particular study.

Implications of this research for nonprofits are numerous. First, for many nonprofits, increasing government grants, even when controlling for fundraising, is likely to reduce private contributions by an amount equal to or even greater than the change in government grants, *ceteris paribus*. This raises the question, why are organizations so eager to increase their level of support from the government? Perhaps large government grants require less effort than traditional fundraising for private support. It may also be the case that there is less volatility in government grants, and organizations are interested in smoothing revenues and expenditures over time (Harrison & Laincz, 2010). Evidence that organizations prefer stable but lower revenues may indicate risk-aversion in the sector and demonstrate the move towards diversification. There is also evidence in the first essay that the most efficient organizations may not be applying for government grants, suggesting that the most efficient organizations are those that realize changes in government grants may not be ideal for an organization trying to maximize total (or net) revenues.

Growing reliance on earned program service revenues, a noticeable trend in the nonprofit sector (Harrison & Wilsker, 2011; Kerlin & Pollak, 2010), may also prove a deterrent to private contributions in the future. Especially for Human Service organizations, increases in earned revenues decrease private contributions (although the opposite is true for Arts organizations). It should be noted, however, that this effect for Human Service organizations is consistently less than one, suggesting that growth in the prior year's earned revenues is not completely offset by declining contributions. Even with the negative relationship, organizations in this category may still look to program service revenues as a means for improving stability or creating growth.

Lastly, pressure on nonprofit organizations to provide information on financial efficiency may largely be unwarranted. Donors may not know what to make of the data or fail to research organizations. In either case, the most commonly used efficiency proxy, price, fails to prove significant in any of the models estimated. Organizations moderately shifting expenses between fundraising and other expense categories during the period 1998-2003 were unlikely to see any negative repercussions from such changes. To the extent that watchdog agencies may be more influential now than during the years of this study, it is possible efficiency proxies could be more influential. Most research suggests that individuals are not researching organizations (HopeConsulting, 2010; The Center on Philanthropy at Indiana University, 2007), but further research on this topic is warranted.

There are additional implications for the public sector. When estimates of crowding out are incomplete, the government can feel fairly confident that their grants are increasing service provision, although further analysis is necessary to compare trends in government grants with program expenses. This study suggests significant crowding out, leaving the public sector to question whether tax dollars are put to the best use. If the public sector is committed to building relationships between the sectors, a variety of grant types, including matching or conditional grants, may be needed to reduce the crowding out effect. Another question has to do with displacement. If public sector funds reduce private contributions to recipient organizations, to what extent are displaced private funds flowing to direct competitors with similar missions, nonprofits providing different services, or removed from the nonprofit sector entirely.

Nonprofit organizations vary considerably in their missions, clients served, and resource dependence. While attempting to integrate existing theories and add a new

dimension, more questions arose than were answered. There is evidence of considerable crowding out, and growing dependence on earned program revenues may decrease contributions. That being said, contributions to the nonprofit sector continued to rise during this time period. Our understanding of the nonprofit sector is continuously evolving, and those working in the sector are similarly making strides in their understandings of their own organizations. Continued research in the financing of nonprofit organizations coupled with growing research on competition in the sector (Young, Seaman, et. al 2010) will hopefully result in a more efficient and effective nonprofit sector.

When Disaster Strikes: The Effects of 9/11 on the Determinants of Direct Support

Most Americans can tell you where they were on September 11th when the World Trade Center fell. For those in my generation, it was the first event major event that we will remember for the rest of our lives. We have little recollection of the Reagan administration and the Iran-Contra scandal, and we were pre-teens during the first Persian Gulf War, a quick victory for the Coalition forces with relatively few casualties. With the state of technology and intelligence as they were at the turn of the millennium, we could not fathom the events of September 11th.

Although concentrated in New York City, Washington, D.C., and Somerset County, PA (where Flight 93 crashed), 9/11 was different from natural disasters in which meteorologists are often able to give some warning and damage is limited geographically. Americans rushed to the aid (including financially) of those in the affected regions but also recognized the need for preparedness within their own regions. While in the midst of a recession (March-November 2001), you could sense a shift in Americans' priorities.

Despite the effect such events have on nonprofit revenues, we know little about how these events affect the determinants of contributions at the organizational level. As scholars, we discuss the effects of fundraising, reputation, and government grants, to name a few factors of donations, but when people are making more spontaneous decisions or offering support to new organizations, we do not have a clear theory of what to expect. This paper intends to begin building such a theory and analyzes data surrounding 9/11 to assess the merits of this theory.

How do the affects of organizations' behaviors and resources affect contributions following catastrophic events relative to more normal times? To answer this question, the remainder of this essay is organized as follows. First, the author discussed literature pertaining to contributions following 9/11 and other natural disasters. Because the previous essay provides a review of the literature on the determinants of contributions, discussion of research on these topics is generally limited. Instead, the author presents reasons why we might expect the effects of these determinants to differ following disasters. Then, the methodological approach is presented, followed by a description of the dataset. Results from a set of first-difference models are presented and discussed, followed by a conclusion that highlights implications and areas for further research.

Donations following 9/11

Although a tragic event in American history, 9/11 provides an opportunity to study an exogenous change in contributions (Yurenka, 2009). Like the tsunami in 2004, Hurricane Katrina in 2005, and the earthquake in Haiti in 2010, 9/11 spurred millions of dollars in private contributions. In one of the few scholarly articles examining organizational level contributions pre- and post- 9/11, Yurenka (2009) concludes that for select nonprofit subsectors, fundraising efficiency improved. While fundraising expenses within the studied subsectors of Public Safety and International Affairs rose, this resulted from new entry as opposed to increasing fundraising by existing firms.

On the revenue side, it was unclear at the time whether the events of 9/11 would attract new money into the nonprofit sector or attract money that would have floated to other nonprofit subsectors. Studying indirect support, the Foundation Center surveyed foundations to determine the sources of their relief and recovery grants. For the majority of foundations

in the sample, at least part of their 9/11 grants replaced planned contributions to other nonprofits (Renz, 2002). One might assume that private donors similarly responded, with a number of individuals donating to recovery, rescue, and prevention efforts in lieu of their more regular contribution patterns.

Such an idea is supported by numerous studies conducted shortly after 9/11. K. Steinberg and Rooney (2005), for example, use a unique sample to compare donations and volunteering pre- and post-9/11. A survey on household contributions to the nonprofit sector was already underway when September 11th occurred, and while the same households were not surveyed before and after, observations were collected using the same survey instrument immediately before and after. For select demographics, the authors find increased likelihood of giving and greater amounts donated (K. S. Steinberg & Rooney, 2005). K. Steinberg and Rooney (2005) also provide a review of other studies tracking donations following the events of 9/11.

A separate set of research on nonprofit organizations considered the plight of organizations opening immediately after 9/11. Just over 300 organizations filed for expedited granting of tax exempt status in 2001, but as of 2006, the vast majority of these nonprofits could not be located (McNamara & Hrywna, 2006). Many of these organizations may have satisfied their missions and closed; others may not have been able to handle the competitiveness of the fundraising market after the initial 9/11 shock.

Competition for donations is a reality that nonprofit organizations face daily (Feigenbaum, 1987; Thornton, 2006), and pressures are most severe for organizations that rely heavily on charitable contributions. Nonprofit organizations' decisions about fundraising expenses and the pursuit of other revenue sources undoubtedly affect the level of

direct support an organization receives (see (Baber, et al., 2001; Parsons, 2003; Tinkelman, 1999) for a few examples), but the vast majority of this research does not consider whether their findings would withstand major exogenous events such as 9/11. To be fair, a lot of research uses data prior to 9/11. Seminal works on financial proxies for efficiency, for example, were written long before the terrorist attacks (Khanna, et al., 1995; Okten & Weisbrod, 2000; Tinkelman, 1999; Weisbrod & Dominguez, 1986). The same is true for research on the crowding out of private contributions by government grants (Khanna & Sandler, 2000; Payne, 1998; R. Steinberg, 1991). While significant research pre-dates 9/11, researchers have not lost interest in estimating the relationships between efficiency, resource allocation, and revenue streams (Brooks, 2004; Harrison & Laincz, 2010; Heutel, 2009; Marudas & Jacobs, 2009; Tinkelman & Donabedian, 2007).

Previous research on contributions at the organizational level, for example, arrives at two major conclusions. First, contributions are responsive to changes in nonprofits' expense allocations, although most effects are weak to moderate (Bowman, 2006; Okten & Weisbrod, 2000; Tinkelman & Mankaney, 2007). Second, observed relationships between contributions and government grants are likely the result of changes in nonprofits' behavior (Andreoni & Payne, 2003; Harrison & Laincz, 2010) as opposed to informed responses by donors (Horne, et al., 2005), explaining why estimates of crowding-out vary considerably (Tinkelman, 2010). Despite a large body of research on the determinants of contributions, the dynamics between individual donors, government agencies, and nonprofits may change following an unexpected disaster such as the 9/11 terrorist attacks.

Potential Effects of Catastrophic Events

This essay rests on the notion that donors evaluate nonprofits' resources allocation and revenue streams when making contributions differently following unexpected tragedies than they would during more peaceful times. This section examines reasons why we might expect differences.

First, let us distinguish between those industries that might be gainers and losers following a catastrophe. As Yurenka (2009) notes, there was an increase in the number of firms classified as Public safety and International Affairs. It is likely that money will flow into organizations directly serving the population(s) affected, both in terms of geography and the nature of services provided. To the extent that donors are shifting money from their original nonprofit destinations to responding agencies, we should see a decline in non-responding industries. If contributions in response to the event are in addition to other contributions, then non-responding industries would not see a decline. It is likely that some contributions are reallocated from other industries, while others are made from money that would not have otherwise entered the nonprofit sector.

Because some industries likely experience increases in private contributions while others experience decreases, we might expect that the determinants of contributions to organizations in each of these groups differ. For example, organizations in those industries directly responding the tragedies are likely to experience greater returns to their fundraising efforts immediately following a tragedy. Non-responding organizations, unable to immediately decrease fundraising, may not receive as great of a return to additional fundraising expenses.

In terms of government grants, it is not clear why non-responding agencies would experience a change in crowding-out or crowding-in. What we may observe, however, is that the relationship between government grants and contributions for these industries becomes insignificant, as contributions decline while government funding remains stable. For responding agencies, however, we might expect a shift towards crowding-in (or at least less crowding out). Government grants may signal quality or need, in which case donors respond with increased contributions.

The effect of program service revenues may also vary. Following disasters, relief organizations are often helping those that cannot pay for services. If an organization is able to collect revenues, that may deter contributions. For organizations not directly responding to the event, contributions may also fall for organizations able to collect revenues from service delivery, as donors see contributions to these organizations as optional for the organizations' survival.

Finally, the issue of organizational efficiency is addressed. Previous research in this dissertation suggests that private contributions are not responsive to small changes in efficiency once we control for organizational fixed effects. With donors providing money to organizations that have no history on which to rely, we would expect the continued insignificance of efficiency both for responding and non-responding agencies. As was the case in the previous essay, the author continues to adopt the most common proxy for efficiency, price. Again, price is assumed equal to the ratio of total expenses to program expenses. It is based on average expenses allocations rather than marginal values.

Methodological Approach

To assess the impact of efficiency proxies, government grants, program service revenues, and fundraising expenses on responding and non-responding organizations before and after 9/11, the author proposes the following empirical methods. We begin with a simple approach:

$$\text{DirSupp}_{i,t} = B_0 + B_1\text{FR}_{i,t} + B_2\text{G}_{i,t-1} + B_3\text{PSRev}_{i,t-1} + B_4\text{Price}_{i,t-1} + B_5\text{Pexp}_{i,t-1} + e_{i,t} \quad (\text{EQ 14})$$

Where $\text{DirSupp}_{i,t}$ represents the direct support, or contributions, to organization i in time t , $\text{FR}_{i,t}$ is fundraising expenditures during time t , $\text{G}_{i,t-1}$ is government grants during time $t-1$, $\text{PSRev}_{i,t-1}$ is the previous time period's program service revenues, and $\text{Pexp}_{i,t-1}$ measures the organizations program expenses in the previous time period.

Acknowledging the importance of individual fixed effects, we could easily amend our regression to include a factor, u_i , a representation of an organization's characteristics that do not vary with time. Our model becomes:

$$\text{DirSupp}_{i,t} = B_0 + B_1\text{FR}_{i,t} + B_2\text{G}_{i,t-1} + B_3\text{PSRev}_{i,t-1} + B_4\text{Price}_{i,t-1} + B_5\text{Pexp}_{i,t-1} + u_i + e_{i,t} \quad (\text{EQ 15})$$

Rather than fixed effects models which remove the fixed factor by subtracting an organization's average values from each of the variables, this essay opts instead for a first-differences (FD) approach. In theory, the first differences approach still removes the unobserved time-invariant factor by subtracting the above equation for time $t-1$ from time t , but the restriction is not as severe. Our FD model is:

$$\Delta\text{DirSupp}_{i,t} = B_{\text{FD}} + B_1\Delta\text{FR}_{i,t} + B_2\Delta\text{G}_{i,t-1} + B_3\Delta\text{PSRev}_{i,t-1} + B_4\Delta\text{Price}_{i,t-1} + B_5\Delta\text{Pexp}_{i,t-1} + e_{i,t} \quad (\text{EQ 16})$$

Although a constant term is not necessary in the FD approach, one is included for the following reason. Direct support may change even when other revenues and expenses do not. The term, B_{FD} , will capture these trends. If statistically insignificant, then it is likely that the constant B_0 does not change over time.

Given the likely bias from the OLS models, results displayed through the remainder of this paper are limited to those from the First Differences approach, as presented in Equation 16.

Data

To examine the effects of tragedies such as 9/11 on the determinants of private contributions, the author again uses the Digitized Data assembled by the National Center for Charitable Statistics and Guidestar. It includes nonprofit tax returns between 1998 and 2003 (National Center for Charitable Statistics, 2003) for all nonprofit organizations with revenues in excess of \$25,000. While the smallest organizations are underrepresented in the sample, the data are assumed to still represent the vast majority of the formal nonprofit sector.

The same process to clean the data as described in the previous essay is used. Organizations that do not provide direct services according to their activity codes are removed from the sample. So, too, are organizations with questionable data.

In this essay, however, a smaller subset of nonprofits is selected. The discussion above suggests that there are industries that gain and others that lose, responders and non-responders respectively. To represent both groups, four industries are created using the National Taxonomy of Exempt Entities Core Codes. The first industry and the one of most interest is Disaster Preparedness and Relief (M30s and M40s). This category includes nonprofits whose primary activities are listed as Search and Rescue, Fire Prevention, and

First Aid. One might assume that following 9/11, many Americans were interested in funding public safety organizations. The second category was also thought to be affected by the events of 9/11, International Development (Q30s). This category includes organizations involved in economic development, relief, and developing democracy in foreign countries. Unlike with Disaster relief the direction of the public's response to International Development may be ambiguous. Individuals' awareness of political and economic issues in other regions may have increased, thus encouraging donations, but it is also possible that 9/11 created resentment among other donors.

The other two categories were chosen as comparison groups. The author selected Performing Arts (A60s) for two reasons. First, New York City is known for the quality of its performing arts. Second, it could be argued that the beneficiaries of performing arts nonprofits are largely confined to a specific geographical region. So, too, is the work of many Disaster Preparedness or Relief organizations. The second industry selected is Environmental Conservation (C30s). Like International Development, it is feasible that resources flow to geographical areas far removed from the donors' own communities.

Table 33 presents summary statistics for key financial variables. Each category is separated, but for simplicity, years have been combined to calculate averages within the category. Following each number in parentheses is the variables' ratio relative to total expenses or revenues. It should also be noted that the summary statistics are presented only for those observations that are used in this analysis. Trends over time for all organizations are highlighted later in this paper.

Table 33

Summary Statistics by Industry

Variable	Disaster Preparedness	International Development	Performing Arts	Environmental Conservation
Direct Support	71191.61 (.28)	2389585.00 (.57)	251910.50 (.35)	529761.10 (.58)
Fundraising	5613.50 (.03)	163558.10 (.04)	29993.88 (.05)	32143.40 (.05)
Exp. Government Gr.	50060.42 (.20)	828662.00 (.20)	43738.60 (.06)	146271.40 (.16)
Program Exp.	171727.20 (.77)	3443553.00 (.89)	484260.50 (.76)	542872.90 (.84)
Program Service R.	73835.50 (.29)	307289.30 (.07)	326633.70 (.46)	116155.60 (.13)
Price	2.36	1.93	3.12	2.32
Obs.	12866	8046	29574	8293

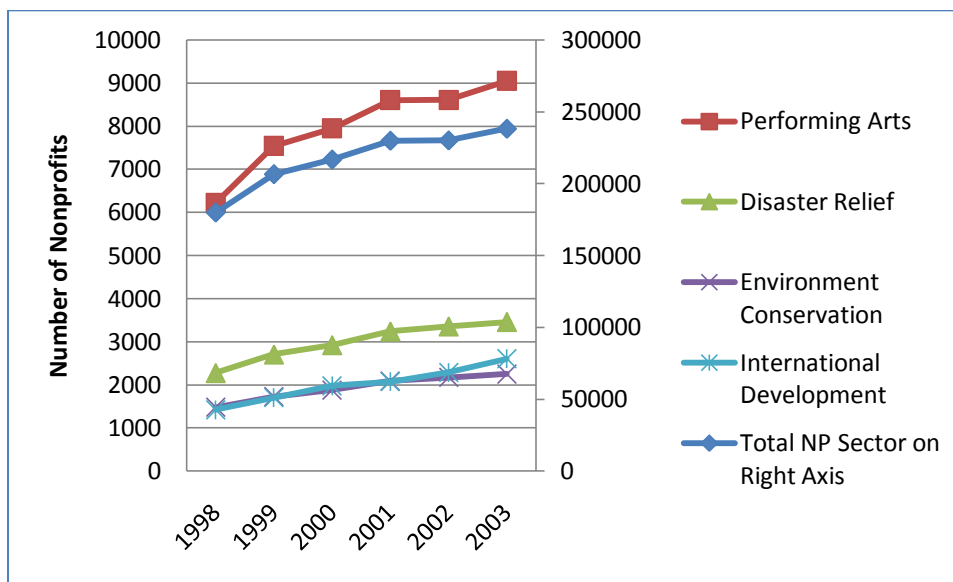
International Development organizations are smallest in number but by far the largest in average contributions (in absolute terms). Of the four categories, Disaster Preparedness and Relief organizations are the least dependent on direct support as a proportion of program expenses, but they also spend significantly less on fundraising in absolute terms. Performing Arts nonprofits are most dependent on program service revenues in absolute terms, but surprisingly, as a share of program expenses, Disaster Preparedness and Relief organizations are second. This may result from the first aid organizations which likely charge for training. Government grants as a percentage of total revenues are equally important to Disaster Preparedness and International Development organizations, but Environmental Conservation does not lag far behind as a share of total expenses and receives almost three times as much government funding as Disaster Preparedness in absolute terms. While differences exist between the categories, particularly in size, similar allocations across expenses and income composition make these categories an interesting group for analysis.

Results

The first part of this analysis is largely descriptive, providing an overview of trends in the sector and specific industries included in this study. Figure 1 displays the number of firms filing Form 990 in each fiscal year. Numbers on the nonprofit sector as a whole are provided on the right axis, whereas the frequency of Performing Arts, Disaster Preparedness, International Development, and Environmental Conservation are on the left axis.

Figure 1

Number of Nonprofits by Subsector



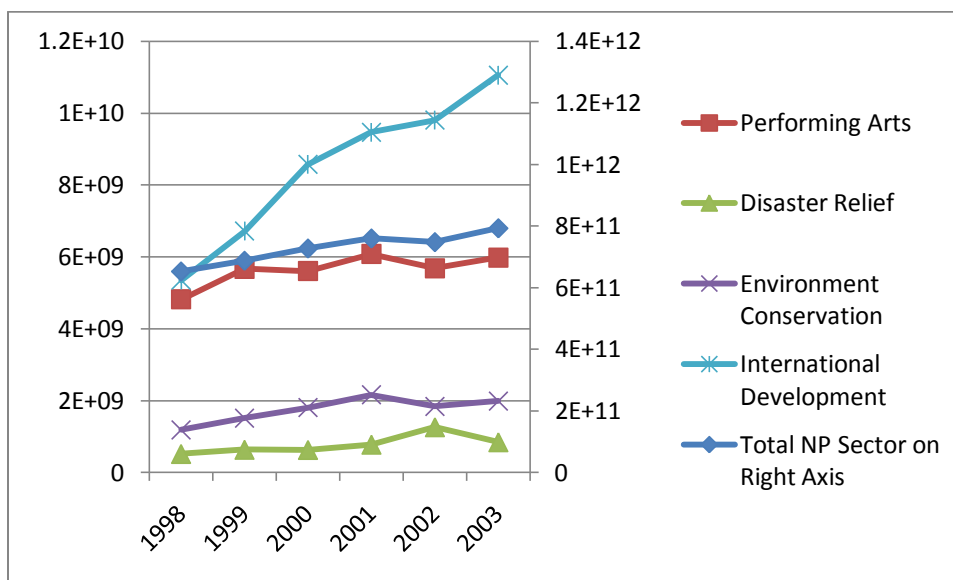
For the sector as a whole, the number of nonprofits increased almost 15% between 1998 and 1999, and then grew at a rate between 3.5 and 6.0 percent for the remaining years except the time between 2001 and 2002, when there was virtually no growth. Performing Arts organizations followed a similar pattern, with slightly more growth (as a percentage of

the existing number of firms) when compared to the sector as a whole. Again, growth between 2001 and 2002 is negligible. Disaster Preparedness, International Development, and Environmental Conservation nonprofit industries follow similar trajectories except the increased growth rate of International Development organizations between 2002 and 2003. Each of these categories grew at more than three percent during 2001 to 2002 when the sector as a whole was stagnant.

The number of organizations in a particular industry is only part of the picture. Perhaps more important are the revenues reported within each sector. Figure 2 again compares the categories across time, with the revenues of the sector as a whole presented on the right.

Figure 2

Total Revenues by Subsector



Revenues in the nonprofit sector grew at a more stable pace than the number of nonprofits. Growth consistently falls between 4.5 and six percent, with the exception of the 2001 to 2002 time span, when the sector's revenues fell 1.5 percent. With a stock market bubble bursting and a recession beginning before 9/11, many donors and foundations found themselves reducing contributions prior to the terrorist attacks.

Each of the subsectors follows distinct paths. Revenues in the Performing Arts are generally more cyclical, and thus a decline of 6.5 percent between 2001 and 2002 does not seem as alarming. Although there are fewer Environmental Conservation nonprofits, they generate more aggregated revenues than the Disaster Preparedness organizations. For the Environmental Conservation nonprofits, growth rates ranged from eight percent to more than 25 percent for all years except 2001-2002, when revenues fell almost 15 percent. International Development nonprofits, while growing only moderately in number, more than doubled their reported revenues during the six years in this dataset. For all years except 2001-2002, this industry's revenues increased between ten and twenty eight percent. Between 2001 and 2002, revenues increased a modest 3.5 percent.

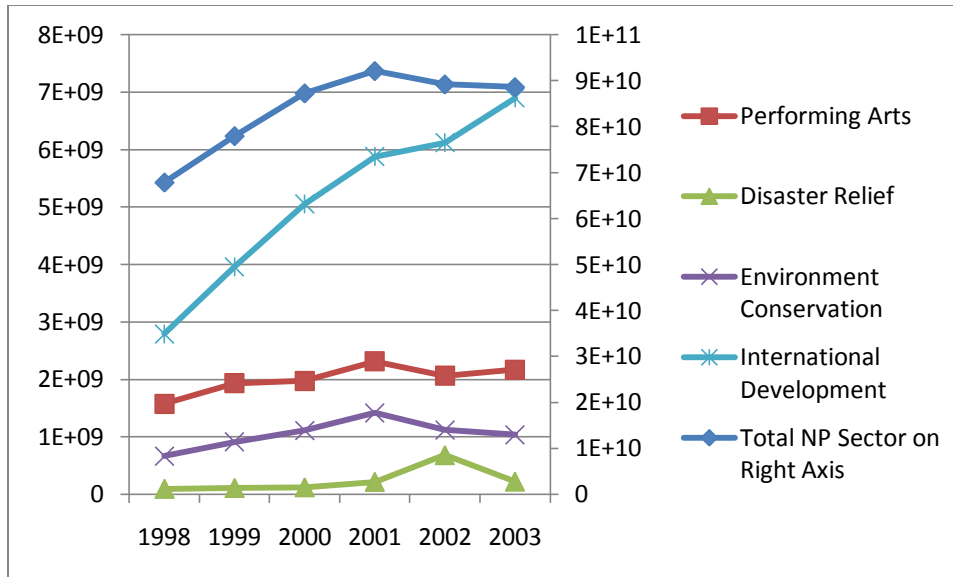
Disaster Preparedness, however, follows a unique trajectory. Revenues follow a mild growth path until 2001-2002, when revenues increase by 66 percent. The following time period, 2002-2003, revenues decline by more than a third, returning to a growth path more consistent with pre-9/11 revenues. Much of this growth occurred within New York State, but organizations outside of New York still grew twenty percent between 2001 and 2002.

The above table documents growth in total revenues, but this essay is particularly interested in private contributions (or direct support). Because some of these organizations may be receiving a significant proportion of their revenues through program services or

government grants, the following figure presents information only on direct support. Again, the nonprofit sector is on the right axis.

Figure 3

Direct Support (Private Contributions) by subsector



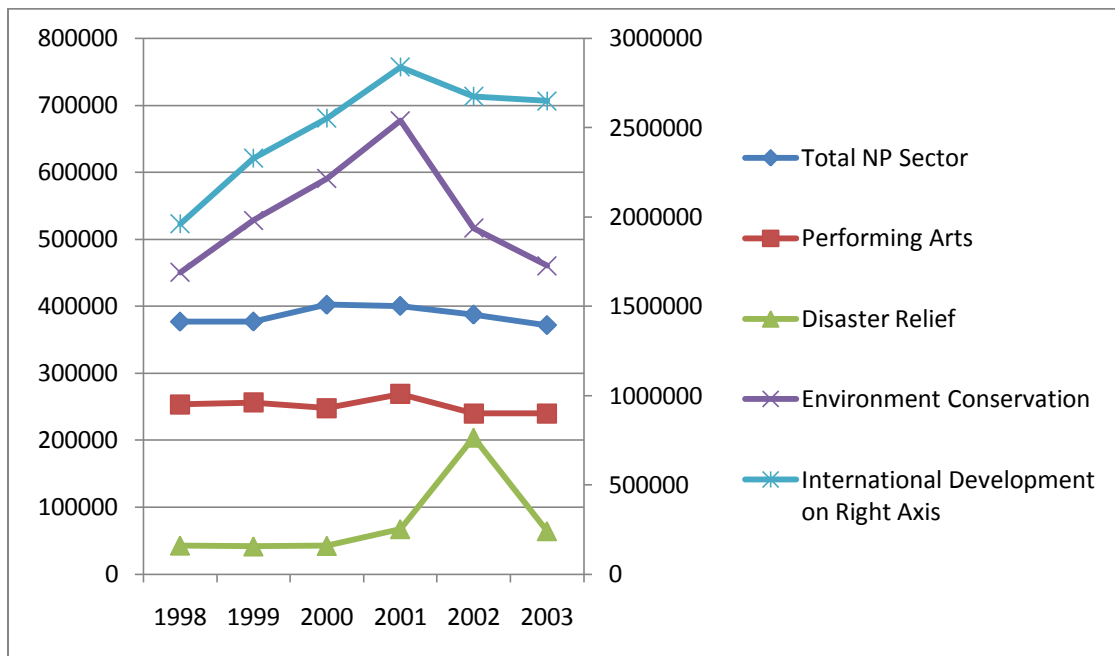
Although at different levels, the trends in direct support largely follow those of total revenues with a few important exceptions. For example, total revenues for the nonprofit sector recovered in 2003. The graph above suggests that while total revenues rose, private contributions continued to fall for the sector. The same is true for organizations classified as Environmental Conservation. By 2003, aggregate contributions were less than the level reported in 2000. Between 1998 and 2001, contributions to Performing Arts organizations were the most volatile, failing to create a smooth path like we find in other categories. :L_ “Following the dip in aggregate contributions in 2002, direct support rose in 2003, but the

recovery fell short of 2001 levels. International Development organizations' growth in private contributions slows after 2001, but the industry never suffers an actual loss. Finally, private contributions to Disaster Preparedness nonprofits spike between 2001 and 2002, before returning to levels closer to those prior to 9/11.

The final figure graphically represents average contributions for organizations in each subsector, data that could be extracted from the figures above but is still interesting to see on its own. Recognizing the differences between organizational and industry trends is imperative to understanding organizations' specific concerns even within growing subsectors.

Figure 4

Average Direct Support by Subsector



This is the only figure in which the Nonprofit Sector as a whole is on the left axis along with most industries while International Development is on the right. Average size of International Development nonprofits far exceeds the average in the sector and other industries. Unlike its growth in the aggregate, however, organizations, on average, experienced declining private contributions between 2001 and 2003. No industry, however, experienced the declines realized by Environmental Conservation organizations. After growing rapidly between 1998 and 2001, contributions continuously fall and by 2003, average contributions equaled those from 1998. Changes in the Performing Arts, like the sector as a whole, were much less dramatic, but in both cases, there is little difference between real direct support in 1998 and 2003. Finally, for Disaster Preparedness nonprofits, we find the expected increase in average contributions between 2001 and 2002 and a decline in the following year.

The trends provide an overview of what might be occurring in the nonprofit sector, but they do not answer the questions of what factors affect contributions at the organizational level and how donors change responses to these factors when major, unexpected events such as those of 9/11 occur. For the next step, we turn to our empirical strategy and focus specifically on the four specific industries described earlier.

First Differences Equations

Empirical results in this section are based on Equation 16, described in greater detail in the methodology section. Results are estimated for each category and time period to highlight differences pre- and post- 9/11 differences across responding and non-responding industries. Results should be interpreted as within organization estimates, with parameters

representing the expected change in direct support between time t and $t-1$ given a change in the independent variables during times t and $t-1$ or times $t-1$ and $t-2$ for the lagged variables.

In the case of Performing Arts, we find that changes in fundraising between 1999 and 2000 yielded changes in direct support similar to those expected if an organization were maximizing net revenues (R. Steinberg, 1986a). The coefficient for fundraising between 2000 and 2001 is most surprising, increasing to an expected return of more than seven dollars per additional dollar allocated to fundraising, *ceteris paribus*. Changes in fundraising between 2001 and 2002 and then between 2002 and 2003 did not significantly affect the level of direct support. Prior to September 11th, government grants were expected to crowd out direct support, a finding that differs from the OLS predictions. Between 2001 and 2002, organizations that received more government grants could expect to receive increased contributions, whereas there is no statistically significant effect on direct support by government grants between 2002 and 2003. Growth discouraged contributions in the first two columns, whereas an increase in program expenses increased contributions between 2001 and 2002. It is also the case that changes in price between 2001 and 2002 are negatively associated with changes in contributions between 2002 and 2003. Finally, a \$1000 increase in program service revenues increases the expected change in direct support by \$230 and \$972 dollars between 1999, 2000, and 2001, but decreases the expected change in direct support by \$1,166 and \$133 between 2001, 2002, and 2003.

With the exception of price, a pattern emerges in looking at the signs and significance of the remaining variables. Signs and significance match in the first two columns, although there is variation in the magnitude. Between 2001 and 2002, however, significance is either lost (for fundraising) or the parameters completely change signs. What were negative

relationships become positive and vice versa. In 2003, many of the variables become insignificant or decrease in magnitude from the 2001-2002 levels, suggesting a slow return to pre-9/11 levels.

Table 34**First Differences - Performing Arts**

Performing Arts	(1)	(2)	(3)	(4)
	1999 - 2000	2000 - 2001	2001 - 2002	2002 - 2003
Fundraising Expenses	1.129*** (0.132)	7.052*** (0.128)	-0.390 (0.242)	0.195 (0.181)
Government Grants (lagged)	-0.155*** (0.051)	-0.208** (0.088)	0.237* (0.137)	-0.011 (0.022)
Program Expenses (lagged)	-0.273*** (0.040)	-0.774*** (0.096)	0.150** (0.067)	0.011 (0.022)
Program Service Revenues (lagged)	0.230*** (0.044)	0.972*** (0.112)	-1.166*** (0.081)	-0.133*** (0.040)
Price (lagged)	-159.357 (749.236)	3,045.814 (4,859.918)	-4,308.598 (6,087.633)	-17,486.461*** (3,703.883)
Constant	26,716.394* (14,019.455)	28,874.466 (28,293.998)	-37,932.696 (26,235.006)	-20,155.425 (14,262.495)
Observations	2832	3259	3399	3649
R-squared	0.04	0.49	0.33	0.02

Standard errors in parentheses. * Significant at 10%; ** significant at 5%; *** significant at 1%

With the results from Performing Arts organizations creating a clear pattern, we look to see whether that pattern is replicated in our second comparison category, Environmental Conservation. Although the results are not as strong, there is one pattern that emerges. For all determinants (except price which lacks significance), it is always the case that the

parameters between 2001-2002 and 2002-2003 change sign (or at least lose significance as is the case with government grants). For example, between 2001 and 2002, an additional dollar allocated to fundraising was expected to increase direct support by almost \$38, *ceteris paribus*. An increase in fundraising of the same magnitude between 2002 and 2003 is expected to decrease the change in direct support by almost \$8. Government grants are expected to crowd-in direct support for all years until 2002, with the greatest expected change between 2001 and 2002, when an additional \$1000 in government grants is expected to increase direct support by \$1481, significantly more than dollar-for-dollar. By 2003, however, changes in government grants have no effect on direct support. The over-all crowding in by government grants contradicts the expectations set forth in the OLS models, when most of the years exhibited crowding out rather than crowding in parameters. By controlling for organizational fixed effects, we also find differences in the parameters for the change in program service revenues compared to the earlier specification. In the OLS model, the coefficient on this variable was negative in most cases. Now, it lacks significance half of the time, and between 2001-2002 and 2002-2003, increases in program service revenues are expected to increase and then decrease direct support by almost identical levels – close to \$350 per \$1000 change in program service revenue.

Table 35

First Differences - Environmental Conservation

Environment Conservation	(1)	(2)	(3)	(4)
	1999 - 2000	2000 - 2001	2001 - 2002	2002 - 2003
Fundraising Expenses	3.405***	2.022	37.928***	-7.984***
	(0.703)	(2.103)	(2.617)	(1.589)
Government Grants (lagged)	0.847***	1.075***	1.481***	-0.065
	(0.090)	(0.218)	(0.324)	(0.105)
Program Expenses (lagged)	-0.019	0.056	-0.180***	0.103**
	(0.026)	(0.063)	(0.060)	(0.045)
Program Service Revenues (lagged)	0.372	-1.066	0.347**	-0.362***
	(0.254)	(0.684)	(0.140)	(0.059)
Price (lagged)	-97.495	-298.853	-1,151.684	858.810
	(692.704)	(7,371.088)	(7,307.593)	(14,498.966)
Constant	118,555.747*	257,771.002	-163,734.446	57,569.362
	(62,898.233)	(172,270.086)	(144,232.257)	(69,580.532)
Observations	739	841	930	1015
R-squared	0.20	0.04	0.21	0.08

Standard errors in parentheses. * Significant at 10%; ** significant at 5%; *** significant at 1%

In originally conceptualizing this essay, the author expected the categories of Performing Arts and Environmental Conservation to serve as comparison groups for Disaster Preparedness and Relief and International Development. Both of these categories of nonprofits, particularly Performing Arts, demonstrate changes that may have resulted from 9/11. In the case of Disaster Preparedness, 2001-2002 does not serve as the same switch point. Consider the change in fundraising, for example. The variable is insignificant

between 1999 and 2000, but following 2000, the returns to an additional dollar spent on fundraising are fairly consistent between 55 cents and 79 cents. Changes in government grants increase direct support between 1999 and 2000 and again between 2001 and 2002, but had no significant effect during the other time spans in this analysis. Size, as measured by program expenses, is consistently negative and significant but does increase in magnitude following the events of 9/11. Program service revenues are insignificant before 2000, but in 2000-2001 and 2001-2002, the relationship is positive, reaching a height of a \$240 change in direct support given a \$1000 increase in program service revenues. It is not until 2002-2003 that we observe a change in sign, with a statistically significant but relatively small, negative effect. Unlike the Performing Arts, no clear pattern emerges.

Table 36**First Differences - Disaster Preparedness and Relief**

Disaster Prep	(1)	(2)	(3)	(4)
	1999 - 2000	2000 - 2001	2001 - 2002	2002 - 2003
Fundraising Expenses	0.064 (0.070)	0.793*** (0.195)	0.550*** (0.083)	0.751*** (0.236)
Government Grants (lagged)	0.145*** (0.036)	0.010 (0.010)	0.253*** (0.042)	0.119 (0.077)
Program Expenses (lagged)	-0.129*** (0.019)	-0.056*** (0.016)	-0.224*** (0.024)	-0.276*** (0.042)
Program Service Revenues (lagged)	0.061 (0.052)	0.080*** (0.027)	0.240*** (0.036)	-0.043*** (0.016)
Price (lagged)	-1.035 (100.095)	-1.078 (108.466)	-641.346 (540.641)	-35.589 (585.869)
Constant	1,468.148 (3,579.435)	3,043.109 (3,276.816)	2,672.240 (4,092.907)	3,870.118 (5,859.285)
Observations	1177	1373	1491	1567
R-squared	0.06	0.03	0.08	0.04

Standard errors in parentheses. * Significant at 10%; ** significant at 5%; *** significant at 1%

Results from the first differences model for International Development are presented in the next table. As was the case with Disaster Preparedness, 2001-2002 does not emerge as a year in which we find considerable changes for all variables involved. The effect of fundraising during this time period, for example, is the second lowest in the time span considered. Changes in government grants are not expected to change direct support between 1999 and 2000, but after 2000, crowding out occurs and continuously grows in magnitude. For example, a \$1000 increase in government grants between times $t-1$ and $t-2$ decreases direct support by \$220, \$776, and \$1,573 in each of the years following 2000. Increases in size are initially associated with increased direct support but lose significance in 2001 and become negative between 2001 and 2002 before decreasing in magnitude in 2003. Program service revenue, the last variable of interest in this model, is insignificant in all years except 2002-2003, when a one dollar increase in program service revenue is expected to decrease the change in direct support by 82 cents.

Table 37**First Differences – International Development**

International Development	(1)	(2)	(3)	(4)
	1999 - 2000	2000 - 2001	2001 - 2002	2002 - 2003
Fundraising Expenses	1.658*** (0.198)	5.770*** (0.421)	3.023*** (1.108)	8.334*** (0.404)
Government Grants (lagged)	-0.183 (0.118)	-0.220** (0.088)	-0.776*** (0.187)	-1.573*** (0.132)
Program Expenses (lagged)	0.126*** (0.030)	0.020 (0.016)	-0.769*** (0.093)	-0.183*** (0.035)
Program Service Revenues (lagged)	-0.264 (0.327)	-0.047 (0.140)	0.013 (0.285)	-0.820*** (0.066)
Price (lagged)	-4,194.426 (19,759.761)	2,644.358 (17,050.126)	-6,473.215 (254,344.740)	-3,692.481 (45,142.209)
Constant	-32,931.473 (135,374.379)	-50,222.917 (105,914.307)	617,556.702 (457,285.649)	190,885.038 (177,808.416)
Observations	708	809	859	925
R-squared	0.28	0.20	0.23	0.63

Standard errors in parentheses. * Significant at 10%; ** significant at 5%; *** significant at 1%

Thus far, the results have demonstrated that 9/11 may have affected the determinants of contributions more for non-responding organizations than those responding directly to the tragedy. The results thus far, however, make no distinction between organizations geographically located in an area directly affected by 9/11 and those in other parts of the country.

Geographic Distinctions

In this section, we reconsider the case of Disaster Preparedness and Relief organizations and compare organizations in the tri-state area (New York, New Jersey, and Connecticut) and the D.C. area (DC, Maryland, and Virginia) with those in the rest of the United States. Numerous nonprofits emerged to address the needs of these two areas

following the terrorist attacks. It is also the area where most donations flowed. Because donors were faced with a greater choice of nonprofits in these areas, we might expect to find more significance in our determinants of contributions. Outside of these areas, there are fewer disaster preparedness organizations, and with more market power, past performance may be less significant in determining the level of contributions.

The next table uses the same sample as that in Table 36 but includes interaction terms to separate the effects of each measure within and outside of the NYC and D.C. areas. The results suggest significant differences based on the proximity to the terrorist attacks, although not all differences are in the expected direction.

Consider fundraising expenses. For organizations outside of the tri-state and DC areas, changes in fundraising between 1999, 2000, and 2001 did not significantly change private contributions. In the tri-state and DC area states, however, fundraising is associated with positive changes in direct support during the same years. Following 2001, increases in fundraising positively increased the direct support of organizations in the other states, although the return to a dollar increase in fundraising is expected to vary from 57 to 78 cents. The effect of changes in fundraising for organizations in the tri-state or DC area, calculated as the sum of the parameters on fundraising and fundraising in the tri-state or DC area, is not significantly different from zero following 2001.

Table 38

First Difference Estimation for Disaster Preparedness with Geographic Distinction

	(1)	(2)	(3)	(4)
	1999 - 2000	2000 - 2001	2001 - 2002	2002 - 2003
Tri State or DC	2,511.148	9,206.733	1,061.168	-21,904.606*
	(7,698.809)	(6,765.423)	(8,521.339)	(12,289.730)
Fundraising Expenses	0.063	0.216	0.571***	0.782***
	(0.070)	(0.206)	(0.081)	(0.236)
Fundraising*Tri State / DC	1.655*	2.334***	-0.220	-2.277*
	(0.892)	(0.476)	(0.582)	(1.255)
Government Grants (lagged)	0.315***	-0.005	0.164***	0.112
	(0.053)	(0.010)	(0.045)	(0.091)
Government Grants*Tri State / DC (lagged)	-0.313***	0.829***	-0.078	0.026
	(0.072)	(0.130)	(0.120)	(0.162)
Program Expenses (lagged)	-0.114***	-0.032**	-0.077***	0.006
	(0.019)	(0.016)	(0.027)	(0.056)
Program Expenses*Tri State / DC (lagged)	0.045	-0.288***	-0.548***	-0.614***
	(0.111)	(0.105)	(0.052)	(0.084)
Program Service Revenues (lagged)	0.074	0.032	0.081**	-0.051***
	(0.057)	(0.026)	(0.038)	(0.016)
Program Service Rev*Tri State / DC (lagged)	-0.107	1.270***	0.481**	-0.281
	(0.138)	(0.141)	(0.231)	(0.339)
Price (lagged)	2.992	-24.633	-169.270	116.727
	(99.380)	(103.578)	(532.277)	(1,008.101)
Price*Tri State / DC (lagged)	-2,681.956	-733.479	327.238	-113.105
	(3,186.939)	(1,922.721)	(3,165.830)	(1,227.752)
Constant	-408.287	-1,524.753	4,036.580	9,578.012
	(4,302.790)	(3,769.297)	(4,768.672)	(7,008.981)
Observations	1177	1373	1491	1567
R-squared	0.08	0.12	0.15	0.08

Standard errors in parentheses. * Significant at 10%; ** significant at 5%; *** significant at 1%

For organizations outside of DC and the tri-state area, changes in government grants continue to increase direct support between 1999 and 2000 and again between 2001 and 2002. Within the tri-state area and around DC, however, changes in government grants are associated with an increase in private contributions between 2000 and 2001.

Increases in size, as measured by program expenses, are generally associated with an expected decrease in direct support. For most states, increases in size are expected to decrease direct support between 1999 and 2002. Organizations in the tri-state area and surrounding DC, however, are expected to experience declines in contributions with growth, but only between the years 2000 and 2003. Both this variable and government grants again fail to fall into a clear pattern around 9/11.

Finally, we consider the effect of program service revenues on direct support. For organizations outside of the tri-state and DC areas, increases in program service revenue between 2001 and 2002 are expected to increase direct support, while further increases between 2002 and 2003 are expected to decrease direct support. Organizations in and around New York and DC, however, could expect increases in direct support following increases in previous years' program service revenues between 2000 and 2002.

For comparison, the methods of Table 38 are replicated on a sample of Performing Arts organizations, given the significance of New York to this particular industry. The distinction remains between organizations within the tri-state and DC areas and the rest of the country, but the majority of this sample (55%) consists of nonprofits within New York. Table 39 presents results from this analysis.

Table 39

First Difference Estimation for Performing Arts with Geographic Distinction

	1999 - 2000	2000 - 2001	2001 - 2002	2002 - 2003
Tri State or DC	30,232.342 (32,592.773)	206,965.648*** (57,559.451)	-112,809.128* (58,979.516)	-20,120.701 (33,778.145)
Fundraising Expenses	4.024*** (0.260)	-1.562*** (0.492)	-0.144 (0.353)	1.240*** (0.235)
Fundraising*Tri State / DC	-3.958*** (0.303)	9.760*** (0.505)	1.104 (1.097)	-3.945*** (0.619)
Government Grants (lagged)	-0.371** (0.165)	-0.484*** (0.086)	0.047 (0.143)	-0.010 (0.023)
Government Grants*Tri State / DC (lagged)	0.316* (0.175)	1.313*** (0.176)	-0.711** (0.348)	0.155* (0.084)
Program Expenses (lagged)	-0.426*** (0.046)	0.638*** (0.096)	-0.115 (0.078)	0.038 (0.024)
Program Expenses*Tri State / DC (lagged)	0.462*** (0.086)	-5.872*** (0.196)	0.919*** (0.183)	-0.162** (0.070)
Program Service Revenues (lagged)	0.409*** (0.057)	-0.837*** (0.112)	0.088 (0.100)	-0.031 (0.044)
Program Service Rev*Tri State / DC (lagged)	-0.386*** (0.089)	7.166*** (0.231)	-2.771*** (0.184)	-0.523*** (0.116)
Price (lagged)	5,310.901 (4,718.795)	-864.623 (4,156.473)	32.624 (6,846.109)	3,132.598 (5,227.465)
Price*Tri State / DC (lagged)	-5,462.450 (4,775.803)	-87,423.406 (92,617.838)	-66,246.91*** (24,642.571)	-14,850.962 (12,389.891)
Constant	12,705.255 (15,460.990)	9,434.291 (27,576.542)	1,993.331 (28,161.891)	-12,961.979 (15,875.040)
Observations	2832	3259	3399	3649
R-squared	0.10	0.63	0.40	0.06

Standard errors in parentheses. * Significant at 10%; ** significant at 5%; *** significant at 1%

Unlike with Disaster Preparedness, the results for the Performing Arts when we allow for geographic differences do not follow much of a pattern. Perhaps most notable is the lack of significance for any of the main variables for organizations outside of DC or the tri-state area between 2001-2002. If we look at variables across time, we find minimal evidence of

9/11 effects – possibly the result of fiscal years that place September 11th in the 2001 fiscal year for some organizations – but we cannot draw such conclusions. For example, fundraising outside the tri-state and DC areas positively affects private contributions between 1999 and 2000 and again between 2002 and 2003. Between 2000 and 2001, we find that increases in fundraising are associated with decreases in contributions, a possible outcome from the reallocation of resources to other industries. The opposite effect emerges for organizations within the tri-state and DC areas. Fundraising has a strong, positive effect between 2000 and 2001 but a negative effect on contributions between 2002 and 2003.

Crowding out occurs prior to 2001 for organizations outside of the affected regions, while organizations within the New York and DC regions experience crowding in between 2000 and 2001 and again between 2002 and 2003. For these organizations, we find crowding out between 2001 and 2002.

Interestingly, we again find one instance in which price is a significant determinant of contributions, but this time we find that the negative effect of price is significant for organizations within the tri-state and DC areas, and only between 2001 and 2002.

Further analysis of the Performing Arts might focus on the effects of other changes such as those in the economy that affected the determinants of contributions along with the events of 9/11. At this time, however, this is outside the scope of this paper. Instead, this paper continues the analysis with the geographic distinction in assessing the effects of 9/11 on the determinants of contributions to Disaster Preparedness and Relief organizations.

Robustness Checks

Thus far, analyses have used first difference techniques but are still generated by ordinary least squares methodology. Parameters describe the expected changes to the

conditional mean of direct support given a change in the independent variable. The distribution of direct support for Disaster Preparedness and Relief nonprofits, however, is not normal. A large proportion of observations (approximately twenty-five percent) do not report any direct support, and yet very large organizations skew the average such that it is almost ten times the median.

To check the robustness of the earlier results, the author estimates quantile regressions for Disaster Preparedness and Relief organizations, where parameters are calculated using least absolute value methods and estimate changes in the expected medians. Such estimates are more robust to the presence of large outliers, and are presented in Table 40.

Results from the quantile regression are interesting. Many of the coefficients are statistically different from zero, but their magnitudes are so small that any effects are negligible. A few parameters, however, are worth exploring. For example, for organizations outside of the tri-state and DC areas, changes in fundraising have little effect on the expected median of direct support in all years except the time between 2001 and 2002, when a \$1000 increase in fundraising is expected to increase the median change in direct support by almost \$740. Ironically, changes in fundraising for organizations located around New York or the DC areas increase the conditional median of direct support in all years except 2001-2002. It may have been the case that organizations in the tri-state and DC areas received similar amounts of direct support regardless of fundraising efforts around the time of 9/11, *ceteris paribus*.

Table 40

Quantile Regression Estimates for Disaster Preparedness

	(1)	(2)	(3)	(4)
	1999-2000	2000-2001	2001-2002	2002-2003
Tri State or DC	-6.898*** (0.492)	36.236 (83.085)	213.678*** (3.756)	-576.272*** (5.784)
Fundraising Expenses	0.000*** (0.000)	-0.006*** (0.001)	0.735*** (0.000)	0.004*** (0.000)
Fundraising*Tri State / DC	1.312*** (0.000)	1.094*** (0.003)	-0.693*** (0.000)	0.170*** (0.001)
Government Grants (lagged)	0.000 (0.000)	-0.018*** (0.000)	0.000** (0.000)	-0.000 (0.000)
Government Grants*Tri State / DC (lagged)	0.001*** (0.000)	0.018*** (0.002)	0.004*** (0.000)	-0.004*** (0.000)
Program Expenses (lagged)	0.000 (0.000)	-0.007*** (0.000)	0.000*** (0.000)	-0.000 (0.000)
Program Expenses*Tri State / DC (lagged)	-0.013*** (0.000)	0.006*** (0.001)	-0.009*** (0.000)	-0.029*** (0.000)
Program Service Revenues (lagged)	-0.000 (0.000)	-0.000 (0.000)	-0.000 (0.000)	-0.000 (0.000)
Program Service Rev*Tri State / DC (lagged)	-0.001*** (0.000)	0.006*** (0.002)	0.018*** (0.000)	-0.003*** (0.000)
Price (lagged)	4.774*** (0.000)	-0.846 (0.558)	-1.526*** (0.229)	-10.580*** (0.428)
Price*Tri State / DC (lagged)	-348.132*** (0.184)	31.906 (23.189)	254.164*** (1.312)	-13.932*** (0.470)
Constant	0.001 (0.276)	-35.413 (46.427)	-0.520 (2.108)	-0.098 (3.310)
Observations	1177	1373	1491	1567

Standard errors in parentheses. * Significant at 10%; ** significant at 5%; *** significant at 1%

For organizations outside of the tri-state and DC areas, changes in government grants crowded out contributions for the median organization between 2000 and 2001 but crowded in direct support between 2001 and 2002. This crowd-in, however, amounted to less than one dollar for a \$1000 change in government grants. In the tri-state and DC areas, the conditional median is expected to increase by \$4 per \$1000 change in government grants

between 2001 and 2002, while the exact opposite is true during 2002-2003. Organizations in the tri-state and DC areas also expect decreases in direct support with increases in size, although the largest of these effects is a decline of \$30 in the conditional median when program expenses increase by \$1000 between 2002 and 2003.

Changes in program service revenue have no affect on the expected median of direct support for organizations outside of the tri-state or DC areas, but inside these areas is another story. We find small crowding out between 1999 and 2000, but crowding in occurs and grows through 2002, before reverting back to a small crowding-out effect.

Lastly, by focusing on the median as opposed to the conditional mean, we find our strongest support for an independent effect of price, *ceteris paribus*. The direction, however, is not always as expected. For organizations outside of the tri-state and DC areas, a one dollar increase in price increases the expected median of change in direct support by more than \$4 between 1999 and 2000. Price is insignificant the following year, and by 2001, price has the anticipated negative effect. By 2003, we find that an increase in price decreases the change in direct support by more than \$10. In the tri-state area and DC surroundings, we find that price negatively affects the median direct support between 1999 and 2000. This effect turns insignificant between 2000 and 2001, but by 2002, the effect of price has become significant and positive. Things begin returning to pre-9/11 levels by 2003, although the negative effect remains significantly smaller in magnitude than that prior to 2001. It should be noted, however, that a change in price of \$1 requires a substantial reallocation of expenses for most organizations.

New versus Old organizations

The last comparison in this essay involves comparing those organizations that existed prior to 9/11 with those that likely started up as a result of these events. Organizations emerging in direct response to 9/11 such as Widows of Hope Family Relief Fund may be significantly different from those organizations that operated prior to 9/11. As a result, the author distinguishes between those organizations that filed Form 990 in 2000 from those that did not file their first returns until 2001 or after. Table 41 presents the following information. The first two columns compare first difference estimates in 2003 for existing and new organizations, respectively. Because of the lagged variables in the model and the effects of first differencing, we will only have results for the time period 2002-2003. The last two columns are not first-differences models but still include lagged terms, increasing the number of usable years to two, 2002 and 2003.

Table 41

Comparison of New and Existing Disaster Preparedness Organizations

	(3)	(4)	(6)	(7)
	Existing 2002-2003	New 2002- 2003	NEW 2002	NEW 2003
Tri State or DC	-3,306.075 (6,979.677)	-112,453.180* (66,973.197)	-178,448.544** (86,457.064)	24,920.212 (40,749.268)
Fundraising Expenses	1.053*** (0.144)	0.114 (0.978)	0.155 (0.892)	-0.091 (0.745)
Fundraising*Tri State / DC	-2.906*** (0.704)	1.862 (7.297)	-0.697 (2.645)	7.274*** (0.785)
Government Grants (lagged)	0.117** (0.048)	-0.277 (1.204)	-0.393 (0.557)	-0.297 (0.227)
Government Grants*Tri State / DC (lagged)	-0.042 (0.088)	0.746 (1.530)	-0.472 (0.785)	0.179 (0.377)
Program Expenses (lagged)	0.031 (0.034)	-0.189 (0.316)	0.353 (0.254)	0.287** (0.129)
Program Expenses*Tri State / DC (lagged)	-0.575*** (0.051)	-0.514 (0.418)	2.226*** (0.261)	-0.235* (0.129)
Program Service Revenues (lagged)	-0.051*** (0.008)	0.195 (0.491)	-0.317 (0.257)	-0.277** (0.137)
Program Service Rev*Tri State / DC (lagged)	-0.498** (0.205)	-0.083 (1.531)	-1.533*** (0.472)	0.121 (0.183)
Price (lagged)	134.679 (724.693)	-153.228 (3,154.375)	-996.327 (10,625.476)	257.530 (2,284.721)
Price*Tri State / DC (lagged)	-116.415 (962.623)	410.490 (3,663.854)	2,752.631 (11,047.468)	-425.983 (2,302.948)
Constant	5,183.166 (3,975.760)	30,801.649 (37,679.469)	43,891.748 (52,878.484)	49,476.036** (24,667.889)
First Differencing	Yes	Yes	No	No
Observations	1302	265	348	467
R-squared	0.22	0.04	0.86	0.77

Standard errors in parentheses; * significant at 10%; ** significant at 5%; *** significant at 1%

The first-difference models in the first two columns are substantially different.

Existing organizations in the tri-state and DC areas experienced declining direct support with

increases in fundraising, *ceteris paribus*. The effect of government grants is insignificant, suggesting neither crowding-in nor crowding-out, on average, for these organizations.

Increase in size for an organization and an increase in program service revenue are both expected to decrease the change in direct support expected by an organization. For organizations originating after 9/11, changes in our variables of interest yield no significant changes in direct support, and from the R-squared, we see that very little variation in changes in direct support are explained. This may be the result of the newness of these organizations, and different methods are presented in columns three and four to remove the organizational fixed effects.

In columns three and four, we find that both models explain substantial cross-organization differences in new nonprofits, but the significance of various factors and magnitudes of the variables vary considerably across years. Increases in fundraising, for example, are only expected to increase direct support to new organizations in the tri-state and DC areas, with a one dollar increase expected to increase private contributions by more than \$7. Government funding has no effect on new organizations in either of the years considered regardless of location. Program expenses has a small effect on organizations outside of the tri-state and DC areas in 2003 but not in 2002, whereas for organizations within the tri-state area, program expenses increase direct support in 2002 but not in 2003. A similar pattern emerges for program service revenues. In 2002, organizations in the tri-state and DC areas can expect a decline in direct support with an increase in program service revenue, but this factor loses significance in 2003. Organizations not in the tri-state area or surrounding DC, however, could not expect a change in direct support with an increase in program service

revenue in 2002 but could expect a \$277 dollar increase for every \$1000 increase in program service revenues in 2003.

Discussion

Scholars have long studied the determinants of contributions at the organizational level, but to date, little attention was given to how the determinants of private donations might change following a major tragedy. This paper begins to develop a relevant theory and provide empirical analysis on this issue, distinguishing between industries that did and did not directly respond to victims' needs following the events to 9/11. To do so, four subsectors are selected for comparison. Most relevant to 9/11 are the Disaster Preparedness and Relief organizations. With New York one of the sites most affected by 9/11, Performing Arts is selected as a comparison group given the importance of this sector to New York City. I was also interested in how the determinants of contributions to International Aid changed given the links between the terrorist attacks and specific regions of the world. Given that Americans are not direct beneficiaries of International Aid, Environmental Conservation is selected as a comparison given the public-goods nature of its mission.

Descriptively, significant differences in the growth of these four subsectors exist. For example, direct support of Disaster Preparedness organizations remained relatively low and stable, with the exception of an expected peak following 9/11. International Development is the only category that grew across all years in the sample, although growth slowed following 9/11. Both Performing Arts and Environmental Conservation nonprofits suffered a drop in contributions following 9/11, but while Performing Arts regained some of its lost ground by 2003, the direct support of Environmental Conservation continued to fall.

The first sets of results presented are Ordinary Least Squares estimates. The results across years are relatively consistent, although categorical differences exist. These models, however, do not control for any time-invariant, unobservable fixed effects. Discussion, therefore, is limited to the second set of first-differences results. Of all the categories analyzed at this stage, donors to Performing Arts organizations display the most significant change in behavior in response to 9/11. Government grants and size were both negatively associated with changes in direct support while the relationship between program service revenue and direct support was positive prior to 9/11, *ceteris paribus*. Each of these relationships, however, changed directions following 9/11. Environmental Conservation organizations followed a weaker pattern. For example, government grants crowded in donations through 2002, when the effect peaked at more than a \$1.48 return per additional dollar in government grants. Between 2002 and 2003, however, changes in government grants were not expected to affect the change in direct support. Program expenses and program service revenues were both insignificant prior to 2001. Between 2001 and 2002, a one dollar increase in program expenses decreases the expected change in direct support by eighteen cents, and the same change in program service revenues increases our expectation for direct support by almost thirty-five cents. Between 2002 and 2003, however, the parameters on both of these variables reverse signs such that an increase in size is rewarded, and organizations that further increase program service revenues are punished. International Development nonprofits fail to follow any particular pattern related to 9/11, but the results are still interesting. We find donors increasing their responsiveness to government grants with crowding out ranging from insignificant between 1999 and 2000 to more than \$1.50 per dollar increase in government grants between 2002 and 2003. It also seems that following

9/11, growing organizations could expect fewer contributions. Again, growth is lagged and current fundraising is included in the model, so it should not be the case that organizations are choosing to pursue other revenue streams than direct support. A summary of the signs for significant variables is presented in Table 42 .

Table 42
Summary of Significant Findings

Category	Year	Fundraising	Government Grants	Program Expenses	Program Service Rev	Price
Disaster Preparedness	1999-‘00		+	-		
	2000-01	+		-	+	
	2001-02	+	+	-	+	
	2002-03	+	-	-	-	
International Development	1999-‘00	+		+		
	2000-01	+	-			
	2001-02	+	-	-		
	2002-03	+	-	-	-	
Performing Arts	1999-‘00	+	-	-	+	
	2000-01	+	-	-	+	
	2001-02		+	+	-	
	2002-03				-	-
Environmental Conservation	1999-‘00	+	+			
	2000-01		+			
	2001-02	+	+	-	+	
	2002-03			+	-	

Upon beginning this analysis, the author believed Disaster Preparedness might be the most interesting subsector. In the first differencing results, however, clear patterns around 9/11 did not emerge. Only program service revenues appear moderated by the event, peaking at a twenty-four cent increase in expected direct support between 2001 and 2002 before dropping to more than a four cent decrease between 2002 and 2003. Other variables changed, but not as drastically. For example, a \$1000 increase in program expenses between

1999 and 2001 decreases our expected change in direct support between \$56 and \$129. After 2001, however, the same \$1000 increase in program expenses was expected to decrease direct support between \$224 and \$276. Lastly, we find a different pattern in government grants, where increases in grants are associated with increased direct support between 1999 and 2000 and again between 2001 and 2002, while insignificant in the other years.

Perhaps the unexpected findings for Disaster Preparedness result from the concentrated attacks in New York and Washington, DC. Testing this possibility, the next step interacts a dichotomous indicator equal to one if an organization is in the tri-state area or surrounding DC with each of the variables of interest. Generally speaking, the author finds that returns to fundraising for organizations in DC and the tri-state area are greater before 9/11, whereas the return for organizations outside of these areas is greatest after 2001. Interestingly, organizations outside of the tri-state and DC area realize a less than dollar-for-dollar change. Government grants crowd in contributions for organizations outside of NY and DC in only two of the years, whereas organizations located in NY and DC experience crowd-in during only one of the years analyzed. Overall, increases in size are generally associated with decreased support for Disaster Preparedness Organizations, although the effect is much more pronounced for organizations located inside the tri-state or DC areas. Finally, the author finds a \$1000 increase in program service revenue for organizations in locations other than the tri-state and DC areas increases our expected change in direct support by \$81 between 2001 and 2002 but decreases the expected change in direct support by \$51 between 2002 and 2003. Program service revenue increases our expected change in direct support for those organizations in the tri-state and DC areas by \$481 between 2001 and 2002 and more than \$1200 between 2000 and 2001 for each \$1000 change, *ceteris paribus*. While

we still fail to identify a clear pattern, this part of the analysis firmly demonstrates that the relative weights of factors are affected by location and proximity to the disaster.

To further test results, two more sets of regressions are estimated for Disaster Preparedness organizations. First, the author removes the effects of outliers by estimating the conditional median rather than mean. Interestingly, the author finds more evidence of a 9/11 effect now than with the first-difference ordinary least squares estimates. For example, the return to fundraising spikes between 2001 and 2002 for organizations outside of the tri-state and DC areas, although the expected effect on the median is still below the level needed for service maximization. In the other years studied, the coefficients are so close to zero that one might think these organizations are maximizing revenues rather than services (Steinberg 1986). For the New York and DC areas, however, the returns to fundraising pre-9/11 were close to one but drop significantly between 2001 and 2002 when the total effect for these organizations is not statistically different from zero. Changes in government grants are also associated with increases in direct support in the tri-state and DC areas for all periods before 2002-2003, although the magnitudes of crowding-in are small. For organizations located in areas not directly affected by 9/11, the relationship between changes in government grants and direct support is barely different from zero with the exception of 2000-2001 when it would require a \$100,000 change in government grants to decrease direct support by approximately \$1800. We also find that size has a moderate but significant effect on organizations in the New York and DC regions.

Program service revenues affect organizations located around New York and DC but not organizations outside of these areas. Increases in program service revenues decrease the conditional median of direct support between 1999 and 2000 and again between 2002 and

2003. Between 2000 and 2002, increases in program service revenue increase the expected median of direct support, but even the maximum estimated impact is only \$18 for each \$1000 program service revenue increase.

Most interesting from the quantile (median) regressions is the finding that changes in price significantly affect the expectation of direct support, just not always in the anticipated direction. For example, for organizations outside of the tri-state and DC areas, an increase in price was associated with an increase in direct support before 9/11 and a decrease in direct support after 2001. The opposite was true for organizations inside of the affected areas. Experiencing an increase in price decreased the expected median of direct support between 1999 and 2000 but increases our expectation between 2001 and 2002. The relationship again becomes negative in 2002-2003, but the magnitude in this year is much smaller than the other two periods with significant effects.

The second robustness test separates organizations into two groups based on their existence prior to 9/11. When we estimate first difference models, we find that several of our factors continue to explain changes in direct support in directions already discussed. Interestingly, our factors do not significantly explain any of the changes in direct support for organizations that did not file Form 990 prior to 2001. The organizations' fixed effects are removed, thus reducing our ability to produce causal relationships, but we find numerous differences in the relationships between direct support and our other variables between estimates for 2002 and 2003.

What may explain these findings, particularly as they relate to Disaster Preparation and Relief? We might consider whether all nonprofits serving victims are represented in the sample. The Red Cross, classified as Human Services rather than Disaster Relief, is

excluded, but we know they collected millions of dollars in donations. Other organizations may be classified according to the services they provide but responded directly to the events of 9/11. For example, health clinics assisting patients who were in Manhattan on 9/11 may have received increased donations but are excluded from this analysis according to the classification codes. Another possibility is that organizations are classified in Public Safety (M) but have activity codes that suggest their primary function is the collection and redistribution of resources as opposed to direct service provision. These organizations are also excluded from the analysis.

Finally, it is difficult to separate 9/11 effects from those of the economic recession that occurred around the same time. A longer time period with other events and economic changes is necessary to detangle the confounding effects.

Conclusion

The events of 9/11 were tragic, but as one reporter wrote, they served as a “catalyst” to spur an increased sense of patriotism in Americans (Ross, 2005). An attack on “home soil,” even if hundreds or thousands of miles away, touched the hearts of Americans who in turn opened their wallets and contributed for relief services. Our reaction is not surprising. A recent study of Australians’ giving patterns around disasters concluded that the public’s response is positively correlated with the number of people affected and the amount of media attention a disaster receives, among other factors (Feeny & Clarke, 2007).

While we know contributions flowed to organizations helping those affected by the terrorist attacks, we also know that aggregate contributions to the nonprofit sector declined slightly. If people were giving to Disaster Preparedness organizations, it was coming at the expense of other nonprofits. While scholars tracked growth in giving following 9/11, few

were interested in those organizations that might have suffered, and no one analyzed organizational characteristics that affected whether private contributions increased or decreased.

This paper is the first to assess how the events of 9/11 affected the determinants of contributions at the organizational level. In other words, are organizational characteristics that are important for contributors before 9/11 less important immediately after? The findings from this paper suggest that 9/11 had less of an effect on changing the determinants of contributions for organizations responding to 9/11, such as Disaster Preparedness, than it did for industries not directly responding, such as Performing Arts.

It seems as if the determinants to contributions change more significantly for industries losing funding rather than those receiving an influx of private contributions, an interesting finding that might counter a priori expectations. In other words, most people would expect that some sectors gain revenues while others lose revenues following disasters, but to date, no one has looked at this process and assessed whether the exogenous event such as 9/11 affects the responding and non-responding sectors differently.

The external validity or generalizability of these results may also be questioned. For example, are these results unique to 9/11 or would we find similar patterns around other catastrophes? Unfortunately, the dataset selected limits the analysis to 9/11, but a longer time span of data would allow future researchers to verify or disconfirm these findings around other unexpected tragedies such as the tsunami in 2005, Hurricane Katrina in 2005, and the earthquake in Haiti in 2010, for example.

Aside from disasters, there are other instances in which we might study the reduction of funding, specifically following stories of misallocation of resources by large nonprofit

organizations. An element of trust between society and the nonprofit sector must remain intact for individuals to voluntarily give (Fleishman, 1999). Evidence of misuse of funds or poor leadership damages that trust, and as a result, the sector as a whole or smaller subsectors may suffer.

This essay explained variation and changes in direct support at the organizational level, but perhaps another approach is to use time series techniques to analyze trends at the industry or subsector levels. We talk about the relationship between the nonprofit sector and government as being adversarial or complementary (Young, 2006), but what if a similar relationship exists between nonprofits. Nonprofits could collaborate in the traditional sense, or they could compete with one another for funds and clients, but what if there is another possibility? Suppose that fundraising by some organizations affects contributions to another. Humane Society commercials, for example, feature heart wrenching stories that plant a seed, but what if instead of giving to the Humane Society, someone makes a donation to another no-kill shelter. Media attention and fundraising requests by some organizations following 9/11 may have encouraged contributions to organizations who essentially free-rode off others' fundraising. If this occurs, it could explain the lack of significance or small magnitudes of some of our organizational variables. Including controls for industry level expenses or reconsidering our level of observation could resolve these issues.

There remain a number of issues, both theoretical and empirical, that necessitate further research. Economists are making strides in researching the nonprofit sector, but at the organizational level, a considerable amount of work remains. Identifying those factors that affect private contributions is an important step, but researchers must remain cognizant that these factors can change over time and for a number of reasons. Regardless of why donors

give, we hope that their choice of recipient is based on a rational decision-making process.

To prove useful to the nonprofit sector, it is up to researchers to help organizations understand how and why donors respond and hope that this information improves the efficiency of the nonprofit sector.

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Vitae

Amanda Lori Wilsker was born February 1, 1981 near Beaumont, Texas. She earned a Bachelor of Science degree in Economics from Texas Christian University in 2003. Immediately after college, Amanda relocated to Atlanta, GA and began her Masters in Economics degree at Georgia State University. Completing her Masters in the Summer of 2004, Amanda then enrolled in a joint Ph.D. Program in Public Policy at Georgia State University and Georgia Institute of Technology. While in the Policy Program, Amanda served as a Graduate Research Assistant for multiple faculty members including Dr. Robert Eger, Dr. Christine Roch, and Dr. Marco Castillo.

In the Fall of 2007, Amanda transitioned into the Ph.D. in Economics Program, from which she will graduate in Summer 2011. During this program, Amanda worked as a Graduate Research Assistant for Dr. Dennis Young and Dr. Bruce Seaman.

Amanda has published articles in multiple journals including *Public Finance Review*, *Nonprofit and Voluntary Sector Quarterly (NVSQ)*, *Policy and Politics*, *Voluntary Sector Review*, and *Public Budgeting and Finance*. She has presented at numerous conferences including the annual conferences of the Association for Research on Nonprofit Organization and Voluntary Action and the Southern Economic Association and served as a referee for *NVSQ*, *Nonprofit Management and Leadership*, and *Public Finance Review*.

Since 2004, Amanda taught Principles of Microeconomics and Macroeconomics, Intro to Policy Analysis, and Microeconomics for Public Policy. She has accepted a faculty position as Assistant Professor of Economics in the School of Business at Georgia Gwinnett College beginning August 2011.