GOVERNMENT FUNDING AND FAILURE IN NONPROFIT ORGANIZATIONS

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CHAPTER 1: INTRODUCTION AND LITERATURE REVIEW

Introduction

For nonprofit organizations, securing and sustaining funding is essential to survival. Many nonprofit managers see government funding as ideal because of its perceived security (Grønbjerg 1993; Froelich 1999). However, there is relatively little evidence to support the claim that such funds actually make nonprofits more sustainable, and some research has even suggested that nonprofits receiving “fickle” government funds are more likely to fail (Hager et al. 2004). The primary purpose of this paper is to examine the relationship between government funding and nonprofit failure. Its secondary purpose is to understand the relationships between failure, government funding, and the causes for failure suggested by previous research -- instability of the funding source and low funding diversification.

To examine these relationships, I first review related literature in Chapter 1. Based on this background, I outline my methodology in Chapter 2, explain my hypotheses and report my results in Chapter 3, and discuss the implications of my results in Chapter 4. Here, I begin by reviewing the current literature related to government funding, nonprofit failure, financial vulnerability, stability, diversification, and relationships among these concepts.

Literature Review

The Concept of Death in Nonprofit Organizations

Studying failure of nonprofit organizations is difficult, because nonprofits rarely declare bankruptcy (Greenlee and Tuckman 2007). The federal bankruptcy codes contribute to this phenomenon by stating that nonprofits cannot be forced into involuntary bankruptcy (11 U.S.C.A., sec. 303(a)). Nonprofits can be dissolved voluntarily or by judicial order in most states, but they are more likely to merge with other nonprofits or simply disappear without any formal notification (Hager et al. 1996). Until the Pension Protection Act of 2006 revisions requiring some sort of reporting from all nonprofit organizations, disappearance from official records, such as IRS Form 990 submissions, does not always signal closure, as an organization is not required to submit a report if it earns less than $25,000 in revenue for the year, and a disappearing organization may be surviving at a reduced level of operations. Some organizations are thought to subsist at this reduced level for many years. The term "permanently failing organization," introduced by Meyer and Zucker (1989), is applied to those organizations that persist in operations even though their ability to fulfill their mission is minimal. Finally, some organizations that dissolve do so because they are successful, and these organizations should be distinguished from unsuccessful organizations. Interviews with leaders of Minneapolis nonprofits that closed found up to 20 percent of organizations studied fell within this category of "successful" closure (Hager et al. 1996).

Survival Characteristics in Nonprofit Organizations

Although calculating failure rates for the nonprofit sector as a whole is difficult because of the insufficiency of accurate measures of failure, several studies have been performed which aid in revealing the organizational characteristics associated with higher failure rates. The earliest of these studies focused on simple characteristics such as age, size, and environmental or niche density. Later, studies attempted to find more nuanced variables and determine the reasons why certain variables were correlated with higher failure rates (Hager et al. 2004)

Since Stinchcombe's 1965 finding that younger organizations are more likely to fail than older organizations, age has consistently been accounted for in tests of survival (Hager et al. 2004). Stinchcombe's idea is known as the "liability of newness." A modification on this finding was proposed by Brüderl and Schüssler (1990), who found that the youngest organizations were actually less likely to fail than the "adolescent" organizations which have used up the good will and "honeymoon" period associated with new and optimistic endeavors. This was finally turned on its head by Barron, West, and Hannan (1994), who found a "liability of senescence and obsolescence" among older organizations. Taken together, these findings indicate that age is relevant to survival, but the relationship does not seem to be a simple one.

Although organization size is often correlated with organization age, the liability of smallness was distinguished from age (the "liability of newness") empirically by Freeman, Carroll, and Hannan (1983). Researchers suggest that smaller organizations have more difficulty attracting resources and performing administrative requirements for some funding streams (Hager et al. 2004). For example, staff skills might affect these organizations' abilities to meet government requirements and measurement regulations for grants and contracts.

Finally, there is substantial research to support the effects of niche density on organization survival. A niche is usually defined as a demand for and supply of a particular type of good or service within the larger market. Organizations in niches that are lacking or shrinking in capacity to support them are in danger (Cyert 1978). The relationship between niche density and failure is not linear. Both organizations in a sparsely populated niche (Hannan and Carroll 1992) and organizations in an overpopulated niche have increased death rates.

Hager, Galaskiewicz, Bielefeld, and Pins (1996), studying a set of 35 organizations that had closed in a panel study, identified qualitative correlations with failure. Although the researchers found that all organization closures were unique in some way, the authors were able to make some generalizations. The most commonly cited internal factors for closure were personnel loss and turnover as well as financial difficulties. Externally, respondents felt that market conditions (donors, client, and consumer demand) and organizational legitimacy were the biggest issues. Finally, the authors found that nonprofits with size and age problems often cited disconnection from community networks as an issue.

In 2003, Twombly studied NCCS data from 53 metropolitan areas to find the effects of shifts in environmental factors (including government funding policies) and the effects of organizational factors on nonprofit entry and exit. In addition to confirming the liabilities of adolescence and smallness, and finding that emergency service providers were less likely to fail, Twombly found philanthropic culture within the community was related to organizational death. Human service death rates in moralistic and traditionalistic cultures were higher than death in individualistic cultures, and Twombly attributes this to increased relative reliance on government funds in moralistic cultures and decreased private giving in traditionalistic cultures. However, changes in government funding policies were not found to be significant in this study.

Financial Ratios and Indicators of Failure Risk

In addition to studying relationships between organizational characteristics and failure, researchers have tried to quantify financial indicators of failure risk, or financial vulnerability. Financial vulnerability is similar to organizational failure in that it is difficult to measure but important to understand for nonprofits hoping to avoid problems. The most obvious measure of health, financial surplus, is not necessarily a sign of success (Young 2007a). No indicator can tell the full story of nonprofit financial health, so it is best to use multiple measures to represent this idea (Young 2007a). Greenlee and Tuckman (2007) identify three areas that provide a context for measuring financial health: assets and liabilities, surpluses of revenues over expenses, and efficiency (measures of the productivity of funds within the nonprofit, including days of cash available, debt to equity ratios, etc.). For an individual organization, Keating, Fisher, Gordon, and Greenlee (2005) add to these previous ratios to provide a set of fifteen predictor ratios that can be compared over time within the same organization to evaluate trends or that can be compared with the ratios of organizations in the same stage of life within the same subsector. Table 1A, below, shows these variables and the observations of poor financial health that they were found to successfully predict.

Table 1A: Keating et al. Discrete Hazard Regression Results Showing "Risk" Prediction Ratios Correlated with Various Observations of Vulnerability

					Observation of Vulnerability			
	Variable	**Definition**	**Variable Origin**	**Pre-dicted Sign**	**Insolvency Risk** (Liabilities > Assets) *(Origin: Keating)*	**Financial Disruption Risk** (> 25% decrease in net assets) *(Origin: Trussel)*	**Funding Disruption Risk** (> 25% decrease in revenue) *(Origin: Keating)*	**Program Disruption Risk** (> 25% decrease, program expenses) *(Origin: Greenlee and Trussel)*
Risk Variables	Constant					X	X	X
	NA/TR	net assets/total revenues	Tuckman-Chang	-	X	X	X	
	RCI	revenue concentration index defined as the sum of the squared revenue proportions	Tuckman-Chang	+	X	X	X	X
	NI/TR	net income/total revenues	Tuckman-Chang	-	X	X	X	X
	AE/TR	administrative expenses/total revenues	Tuckman-Chang	-	X			X
	WC/TA	working capital/total assets	Altman	-			X	X
	NA/TA	net assets/total assets	Altman	-	X	X		X
	EBIT/TA	earnings before interest and taxes/total assets	Ohlson	-	X			X
	TR/TA	total revenue/total assets	Ohlson	-	X		X	
	Size	ln(total assets/GDP price level index)	Ohlson	-	X	X		X
	CL/CA	total liabilities/total assets	Ohlson	+				
	NI/TA	current liabilities/current assets	Ohlson	+	X			X
	FFO/TL	net income/total assets	Ohlson	-				
	INTWO	pre-tax income plus depreciation and amortization/total liabilities	Ohlson	-	X	X	X	X
	NAFail	negative net income for the last year (dummy)	Ohlson	+	X	X	X	
	CHIN	$(NI_t-NI_{t-1})/(\|NI_t\|+\|NI_{t-1}\|)$ is the scaled change in net income	Ohlson	-	X	X	X	X
	COMREV /TR	commercial revenues/total revenues	Keating et al	-	X		X	X
	INV/TA	investment portfolio/total assets	Keating et al	-		X	X	X

Although a nonprofit may be interested in learning about its health over time, researchers are mainly interested in the ability of health measures to predict financial vulnerability or failure. Tuckman and Chang (1991), early writers on nonprofit vulnerability and health, defined vulnerability as the inability to withstand financial shock, and determined that organizations lacking in fund flexibility would be most at risk if a financial shock were to occur. The authors decided a priori that nonprofits which ranked in the bottom quintile of nonprofits for at least one of their ratios (equity ratio, revenue concentration, administrative cost ratio, and operating margin) were at risk. Definitions of ill health (and inability to withstand financial shock) made from an observational, rather than predictive standpoint, include a decline in program expenses (as a proportion of total revenue) for three consecutive years (Greenlee and Trussel 2000) or a significant decline in net assets or "equity balances" during a three-year period (Trussel 2002; Trussel et al. 2002). In each of these studies, at least two of Tuckman and Chang's predictive ratios were confirmed as significantly related to the observed ill health. Trussel (2002) included subsector information in the risk model, and Hager (2001) later found that the Tuckman and Chang ratios' ability to predict risk varies by subsector.

Most research regarding financial vulnerability has not examined differences in financial ratios for nonprofits receiving different types of funding. However, a recent study focusing on Washington D.C. nonprofits and operating reserves found that over 70 percent of nonprofits receiving more than two-thirds of their revenue from government grants had less than the recommended ratios of operating reserves. This study also found that the organizations failing over the time period between 2000 and 2006 had lower median operating reserve ratios than the non-failing organizations (Blackwood and Pollack 2009).

Government Support for Nonprofits

Government support for nonprofit organizations has both direct and indirect forms. The most visible support mechanisms are direct subsidies or grants, and reported values for these sources of revenue are often used to summarize government funding for nonprofits (Rushton and Brooks 2007). Organizations also receive support in the form of fees from contracts, which arise when government partners with nonprofits to carry out services. Such contracts are thought to increase innovation in delivery of services by adding competition and financial incentives for those delivering superior services. However, some make the case that this source of income may reduce the quality of provision by nonprofits, lead to accountability and evaluation problems, and decrease the independence and uniqueness of the nonprofit sector (Lenkowsky 1996).

The government also provides indirect support through consumer-side vouchers. These vouchers allow nonprofits to earn a set amount of revenue for each voucher-holder served. The Medicare and Medicaid programs are examples of this sort of support. Consumer-side vouchers have been described as one of the greatest challenges for nonprofits, because they increase competition with for-profit service providers and may change the natures of the services nonprofits offer to conform to customers' wishes rather than best practices for effective service provision (Grønbjerg and Salamon 2002).

According to the Urban Institute's *The Nonprofit Almanac 2008*, direct government subsidies (including grants and payments) to American nonprofits totaled $351.01 billion (Wing et al. 2008). Between 1992 and 2005, the annual percentage change of public charity revenues (measured in constant dollars) from government grants and payments was 5.06, indicating an overall growth of government funding during this period (Wing et al. 2008). Within this total, government grants to reporting public charities totaled $102.78 billion in 2005 (Wing et al. 2008). This comprised 9 percent of the revenue of reporting charities (Wing et al. 2008). The percentages of total income differ by subsectors, up to a maximum of 22.7 percent for human service organizations (Wing et al. 2008). Although reporting requirements make it difficult to calculate these totals with a high degree of accuracy, Urban Institute statistics indicate that the amount of government "payments" from 2005 was approximately $250 billion[1], or 21.9% of reporting public charity revenues[2] (Wing et al. 2008).

It is also worth noting here that the government provides indirect support for nonprofits including tax expenditures (which are taxes the government forgoes by exempting nonprofits from payment of various taxes by allowing tax-deductible contributions) and tax credits that may be tradable on the market (such as Low Income Housing Tax Credits). These forms of support are important to the sustainability of many nonprofits. However, as these foregone tax revenues are not tracked by individual nonprofits, and are therefore difficult to measure, they are beyond the scope of this paper.

Other Sources of Revenue for Nonprofits

Although government funding is a focus of this paper, it is also useful to provide some background on the other sources of revenue for nonprofit organizations. Primary among these is donated income, which is the definitive form of revenue for the sector, the funding source which makes nonprofits unique in their methods of raising capital.

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[1] The statistic for grant and contract revenue is calculated by subtracting the estimated grant revenue from the estimated total government grant and payment revenue reported in The Nonprofit Almanac 2008 (Wing 2008). However, methodology differs for these two estimates make the calculation a rough estimate at best.

[2] Calculated as a percentage the Urban Institute estimation of $1,144 billion in total revenue.

Private contributions made up 12.3 percent of total nonprofits revenues in 2005 (Wing et al. 2008). Donated income includes contributions from individuals, foundations, corporations, and federated institutions such as United Way organizations. Froehlich describes private contributions as being high in revenue volatility (1999). This is because giving is affected by overall economic trends and varies with the S&P 500 (Center on Philanthropy 2009). Other research demonstrates that, although the effect of tax-related changes on giving may be relatively inelastic, wealthy donors and the types of gift vehicles they typically employ, may be relatively more elastic, and thus more volatile (Center on Philanthropy 2009; Steinberg 1990). Finally, nonprofits also experience variation in donated revenue with changes in the personal situations (income and wealth) of a few large donors (Center on Philanthropy 2009), who make up a substantial share of a typical nonprofit's donated income.

In addition to donated income, nonprofits also receive revenue from other sources which are similar to the revenue sources of commercial ventures. These include fees for services (70.3 percent of revenues)[3] and investment income (5.4 percent of revenues) (Wing et al. 2008). Froehlich describes the revenue volatility from commercial activity as being "moderate" (1999). Logically, the investment income varies with the market, depending on the type of investments chosen. Fee for service income is subject to market-based pressures of supply and demand.

[3] This includes the 21.9 percent of revenue from government fees.

Legitimacy, or the Crowding-In or Crowding-Out Effects of Gaining and Losing Government Funding

The resource streams which support nonprofits are complicated by the fact that they are not necessarily independent of one another. Crowding-in occurs when funding from one source increases with increased funding from a second source. Conversely, crowding-out is an inverse relationship between two funding streams. For instance, under the often studied crowding-out hypothesis, the relationship between government funding and private funding, in isolation from other variables, is believed to be negative. Brooks (2000a) summarizes the current literature supporting both phenomenon and finds that the results are inconclusive, but that crowding-out is found slightly more often and is significant mostly in social/human service funding. In this same time period, Brooks (2000b) hypothesized, and found results consistent with the idea, that the level of government funding determines the extent to which government funds leads to crowding-in or crowding-out and the relationship takes a non-linear, concave form.[4]

Brooks (2000a), drawing heavily on earlier work by Rose-Ackerman (1981), lists several reasons why crowding-out might occur. The public might see the nonprofit as less needy because of the influx of government money. It may perceive that the nonprofit is like a government agency (which would not receive donor support). The public might perceive a lack of strength in nonprofits receiving government funds, and may prefer to give to what they perceive as a stronger nonprofit. Finally, the donors may respond to

[4] In Brooks' model (2000b), which states that the relationship between government and private funding is non-linear and concave, there is an amount of government funding that does not maximize total non-earned revenue. Brooks (2000b) labels firms that operate in this funding situation without the risk-tolerance or willingness to reduce government funding to achieve the revenue maximization level as being in a "short-term subsidy trap."

their decreased ability to control the work of the organization or a perceived shift in organizational mission. For crowding-in, Brooks (2000a) (drawing again on Rose-Ackerman (1981)) relates the possibility that funds are offered as matching funds, are seen by donors as proof of quality or reliability, or spur the nonprofit to what donors perceive as greater levels of accountability and administrative due diligence (2000). Rose-Ackerman (1981) also hypothesizes that crowding-in may occur if the government funding allows the nonprofit to achieve efficiencies of scale or reduce uncertainty. Most of these hypotheses relate to the idea of organizational legitimacy. Organizational legitimacy or socio-political legitimacy, which is an area of study within neo-institutional theory, is the ability of an organization to maintain a positive image or reputation among its publics (Baum and Powell 1995). Organizations are thought to do this by signaling conformity to norms and expectations through ties to well established organizations, people, and institutions (Galaskiewicz 1985; Baum and Oliver 1991)

Resource Dependence: The Internal Effects of Government Funding on Nonprofit Organizations

Resource dependence is the term used to describe the state of needing outside resources for survival. This dependence causes organizations to work to maximize the amounts and stability of these funds and also work to minimize the effects of this dependence on the organization. Organizations must interact with and maintain relationships with those who control nonprofit resources at levels varying with the importance and concentration of resources (Katz and Kahn 1966) Many of the effects of resource dependence derive not solely from the restrictions or changes required by the funder, but also from the nonprofit's tendency to try to mitigate its dependence or ensure continued funding by responding to implicit criteria for continued resources (Pfeffer and Salancik 1978)

Dangers from resource dependence on government funds can take several forms within a nonprofit. One common theme in nonprofit literature is the issue of mission drift to conform with funding requirements (offered by Rose-Ackerman 1981, for instance). Froehlich (1999) relates several studies that found shifts in program emphases and goal drift but not core mission problems. One specific example of drift is in the type of services offered. Programs that are accountable to government standards of operation tend to stress equity of service, which may differ from program arrangements which would appeal to private donors or foundations with agendas that focus on one or more selected groups (Smith 1999). Another expression of resource dependence can be in the staff or administrative decisions. Grønbjerg (1993) and others found increases in professionalism and bureaucratization and administrative standards that more aligned with government among those receiving public funds.

Nonprofits, like other organizations, develop core competencies in the areas that are most important to their survival. This phenomenon, which is referred to as structural embeddedness, is also an expression of resource dependence (Froehlich 1999). Competencies in securing one type of funding, however, may not translate into the competencies needed to secure another type of support (Young 2007a). For instance, a nonprofit looking to create or maintain a legislative earmark must develop skills in political advocacy to develop the necessary support. It may hire executive directors or find board members with experience in this area rather than experience in other areas. In addition, the nonprofit may choose to pursue other forms of income diversification less if it perceives government funding will remain steady. Hines (1999) finds that organizations receiving a significant amount of revenue from government grants are less likely to have unrelated business income than those not receiving such grants. Finally, the organizational effects that are believed to account for the crowding out of private funds (as discussed above) may also be relevant here, as this structural shift is a result of resource dependence on government funds.

Organizational Adaptation and Government Funding Stability

The adaptive model of organizational survival expects that organizations which react most rationally to environmental changes will survive (Aldarich and Pfeffer 1976; Bielefeld 1994). It is different from ecological perspectives because it places less emphasis on the changes in the environment and more on the reactions of the organization. The adaptive model is sometimes criticized because it assumes that organizations can always sufficiently and quickly respond to environmental change (Aldrich and Pfeffer 1976; Hannan and Carroll 1992). One adaptive role that organizations must take on is adaptation to unpredicted funding changes.

Revenue predictability, and risk avoidance, is a goal for many nonprofit managers (Kingma 1993). Although the actual stability of government funding is questionable, many in the nonprofit field believe revenue volatility is less of a concern with this type of funding, with Grønbjerg (1993) and Froehlich (1999), and Kingma (1993) describing the source as relatively secure or stable, at least for the organizations these authors examined. Grønbjerg's (1993) research showed that more than 40 percent of the contracts submitted from four social services nonprofits were preapproved or required no proposal for renewal, and no continuation funding requests were denied. Two studies in New York showed similar results, referring to the phenomenon as “organizational entitlement” (Reiner 1989). If this perception hinders the adaptive strategies nonprofit managers might otherwise employ, it could cause higher rates of failure when government cuts occur, according to adaptive theory.

Other authors disagree with this characterization. The study of organization hazard rates by Hager, Galaskiewicz, and Larson (2004) found that the probability of organizational death for organizations receiving public funding was 155 times that of those organizations not receiving public funding. Furthermore, the young organizations that received public funding were found to have hazard rates that were roughly the same as organizations funded by other means, while the older organizations that received public funding were found to have hazard rates that were more similar to the young, government-funded organizations than to the older organizations funded by other means (the government funded organizations had higher hazard rates than the other older organizations). The authors hypothesize that this is due to the "fickle" nature of public funds. This assertion is also made by Rushton and Brooks (2007).

Although a nonprofit that loses government funds may be able to find other sources of funding of equal amount to replace the lost revenue, these sources may carry restrictions that were different from the restrictions on the government funds. More or less flexibility in spending, more or less effort that is exerted to secure the revenue, and more or fewer reporting requirements may not make the revenues totally “equal,” especially if the new funds are less flexible and more resources are needed to secure the new funds than the old ones (Young 2007a). Weisbrod asks if society's "inadequate support for nonprofits [is] pushing them in undesirable, counterproductive directions in search of revenue?" (1998) In other words, what organizational adaptations are made when government funding is lost, and what is the effect of these changes on the "quality" of the nonprofit?

Funding Mix: Fund Diversity, Portfolio Theory, and the Relationship to Resource Dependence Theories

Given that nonprofit require funds from government, private donors, commercial income, or other sources to survive, nonprofit leaders must pursue some mix of these revenue streams to fulfill their missions and survive. Nonprofits are generally assumed to pursue the funding mix that allows them to maximize some desirable objective (reward) such as mission accomplishment or revenue attainment, its proxy, and to minimize some undesirable aspects (risk) such as uncertainty or outside control over mission. This idea is rooted in the business literature's Modern Portfolio Theory, first articulated by Markowitz (1952). The uncertainty of a portfolio is related to the variance of individual components of that portfolio, and the law of large numbers indicates that diversification keeps actual returns close to expected returns (Markowitz 1952). Furthermore, diversification reduces an organization's exposure to risk tied to one revenue stream, such as a change in political leadership, which corporate finance theory refers to as "unsystematic" risk. An ideally diversified portfolio takes unsystematic risk, revenue stream variance, and revenue stream covariance (crowding-in and crowding-out effects) into account (Kingma 1993).

One variation on this theory states that nonprofits pursue diverse revenue streams that allow them to maximize their legitimacy in the community. Legitimacy is thought to increase nonprofits' ability to accomplish their mission-related goals and generate revenue (Bielefeld 1994). This theory is in some ways a political-science-based variant on the objective-maximizing theory (Kearns 2007). Like in the objective-maximizing theory, managers select an objective, but in this case it is a political, external objective rather than an internal objective. They then work to maximize this objective through the proper revenue portfolio.

However, there is also some evidence that, given alignment of goals between nonprofit and funding entities and mutual strength to avoid interrupted funding or services, a non-diversified portfolio can generate stable and low-cost funding for a nonprofit. Gronbjerg (1993) suggested that high-performing nonprofits can enter into a symbiotic and beneficial relationship with relatively non-diverse funding sources and achieve great revenue stability. Recently, Foster and Fine (2007) confirmed that the majority of large nonprofits receive an average of 90 percent of their revenue from one type of funding source, and are only diversified within that source. Furthermore, they are very efficient at securing that type of funding (Foster and Fine 2007).

Foster and Fine's work also lends support to Chang and Tuckman's (1994) "contingency theory" of income diversification. Chang and Tuckman found that, although generally greater diversification leads to increased financial strength, certain nonprofit missions lend themselves to more or less diversified income streams (1994). Foster and Fine's (2007) work supported this by demonstrating that certain funding streams are more naturally-favorable to certain types of missions, and that alignment in this way was needed for succeeding with a non-diversified approach.

The objective-maximizing theory of funding mix selection is related to many previously discussed concepts through the idea of risk avoidance and benefit maximization. There are many forms or risk that a nonprofit organization can wish to avoid. Many nonprofit managers are motivated to reduce resource dependence as an undesirable, or risk-laden, state (Froelich 1999). Managers are often motivated to decrease the administrative risks (the amount of time and administrative attention diverted from programs) related to fund acquisition (Froelich 1999). Managers may also take the relative stability or instability of funding streams into account when making revenue mix decisions (Jegers 1997).

Previous research has shown that greater levels of diversification leads to lower revenue volatility (Carroll and Stater 2008), and theorized that this could increase nonprofit survival (Kingma 1993; Carroll and Stater 2008). Diversification has been empirically identified as a positive influence on certain types of organizations' survival, specifically arts organizations (Hager 2001). Diversification has also been linked to positive results in other financial measures, such as higher operating margins and net assets (Chang and Tuckman 1994) and stability of program spending and net assets (Trussel 2002; Greenlee and Trussel 2000). However, Kingma found that diversified revenue sources may decrease financial predictability (1993). Authors have theorized that diversification could be detrimental to small or immature organizations because it adds a level of complexity which could be difficult or expensive to manage (Carroll and Stater 2008; Froelich 1999; Weisbrod 1998).

The Role of this Paper in Relationship to Previous Work

After reviewing the literature regarding organizational death, factors related to death, financial vulnerability, government funding, other nonprofit funding, stability, and diversification and the theories regarding resource dependency, structural embeddedness, crowding-out, legitimacy, and adaptation, the myriad of concepts surrounding the topic of this paper becomes clear. With this background in mind, the complex task of determination of the relationship between government funding loss and changes in nonprofit organizations, such as financial vulnerability and death, can begin.

This work will synthesize previous research to begin to examine the connection between higher rates of failure for nonprofits receiving government funding with the causes suggested by the research – instability of the funding source and limited fund diversity, suggesting increased resource dependence/structural embeddedness. It will test the null hypothesis that nonprofits receiving government funding are equally or more likely than other nonprofits to fail under similar funding conditions. It will examine the effects of both steadiness and diversification on this hypothesis. This work will strengthen the methodology used in previous research by examining a longitudinal, or panel, data set that has detail regarding many funding streams. Detailed, time-series data is required to assess relationships involving diversification and stability (Kingma 1993). The single longitudinal study concentrates on a very small sample, and the size of this data set is an asset. This work will also employ a statistical technique known as Cox regression which helps to untangle some of the issues of causality found in cross-sectional research.

Academically, the untangling of the conditions in which government funding increases organizational failure, the use of a panel study, and the techniques which strengthen the argument of causality will address knowledge gaps surrounding government funding impacts. The research questions will begin to examine stability and resource dependence/structural embeddedness as being correlated with failure of government-funded organizations. Also, this research has practical implications for nonprofit managers as well as policymakers. Nonprofits require funds to exist. Securing those funds as well as the problems and requirements during that process are sources of concern for managers. Nonprofit boards and managers must be conscious of the risks involved in all types of funding, including government funding, so that they may make wise choices and choose to mitigate these risks. In addition, the knowledge that a loss of government funding streams affects the financial ability of nonprofits may influence government decisions to begin or end nonprofit funding. It may also prompt research regarding the best ways to disentangle government funds from a nonprofit beneficiary.

CHAPTER 2: METHODS

Introduction

What is the relationship between government funding and nonprofit failure or survival? How do revenue diversification and revenue stability affect this relationship? These are the central questions of the following chapters. After describing the methodology and data set I will employ in this analysis, I test three research questions. First, because of the current disagreement in the literature, I analyze the relationship between government funding and nonprofit failure or survival. For robustness, I compare various definitions of government funding, absolute and relative size indicators, lag times, and statistical techniques. Next, because many authors attribute failure to the relative stability of a funding source, I analyze the stability of government funding compared to other sources and the relationship between this risk factor and survival or failure. Then, because the resource dependence and structural embeddedness theories indicate that those nonprofits that are skilled at securing many sources of funding will be more likely to survive, I test the relationship between funding diversity and nonprofit survival or failure. Finally, to combine these ideas, I analyze the effects of a diversified, stable funding base on survival or failure.

Methodology

An ideal experiment to study the effects of government funding on nonprofit survival would demonstrate, for government-funded nonprofits, the difference between their survival rate with government funding and their survival rate had they not been government-funded but had the same stability and diversity of funding. The role of research is to collect and analyze data which approximate this effect by creating an experimental model or observing real-world organizations. Here, I employ an observational approach.

Observation of Panel Data to Study Causality

Researchers observing real-world occurrences to understand causality must contend with underlying questions of causation versus correlation and with unobserved variables. These issues are present with cross-sectional data, which is relatively common in social science research because it is easy for researchers to collect. In cross-sectional analysis, one randomly selects members of a population (or sometimes a complete population) and collects information from them at only one point in time with the aim of analyzing relationships between variables of interest. Because all variables are measured simultaneously, it is difficult to determine order of occurrences, and researchers are unlikely to know, for correlated variables A and B, if B caused A or if A caused B. Furthermore, researchers cannot determine if a fixed, unobserved characteristic of some of the cases causes the effect they are observing.

In contrast, panel data, also known as cross-sectional longitudinal data or simply as longitudinal data, consist of repeated observations of the same objects of interest, such as individuals, cities, or nonprofit organizations. These observations are typically recorded for a randomly selected cross-section of the population but may also be recorded for the entire population. Panel data is used in social science, business, political science, medical, and other forms of research in which a variable of interest can be observed over time. While panel data are sometimes criticized because between-year calculations may exacerbate measurement error bias, two main benefits exist. First, a panel data set allows one to control for fixed characteristics, such as characteristics intrinsic to an individual nonprofit organization. By assuming these characteristics are fixed, one mitigates some of the issues with unobserved (and even observed) heterogeneity. Second, when variables change over time, panel data is ideally suited for addressing the time-order of occurrences to demonstrate causality. It also helps when identifying lagged effects of variables which change over time, such as the effect of government funding which was lost in a previous year on the likelihood of survival in the current year.

Survival Analysis

Survival analysis is a statistical method used for studying the causal relationships between independent variables and survival time of a subject. Survival analysis is a subset of duration analysis, otherwise known as event history analysis, the distinction being that the primary variable of interest, time, is time to death in survival analysis and a more general time until the subject leaves the initial state (such as leaving the state of unemployment for employment) in duration analysis. Duration analysis is also distinguished from survival analysis by the possible inclusion of post-initial-state observations, which are not available in survival analysis. Survival analysis is commonly used in medicine to study factors affecting death in a population or onsets of disease.

The dependent variable in survival analysis is the *hazard rate*---the likelihood that the chosen event will occur in a particular organization at a given time. Often in causal analysis, the researcher is interested in the effect of one or more covariates on the hazard rate. These covariates affect the hazard rate by modifying the hazard function. This function is closely related to the survival function *S(t)* and the probability density function of the survival time, *p(t)*. These four concepts are used to describe different aspects of the survival data. *S(t)* is the probability that an individual's survival time *T* is longer than the current time *t*. That is,

$$S(t) = P(T > t) = \int_t^\infty p(T)\,dT \ .$$

This nonincreasing equation can also be expressed in terms of the probability of failure, *F(t)*, and because the two states are mutually exclusive,

$$F(t) = P(T \leq t) = 1 - S(t) \ .$$

Several assumptions are made in survival analysis. Most notably, (a) the data are assumed to be grouped so that durations fall into defined intervals, in our case years, and (b) any time-varying covariates are assumed to be constant within an interval (Wooldridge 2002).

Methods of Survival Analysis

The two most common methods of survival analysis are binary logistic regression and Cox regression[5]. In binary logistic regression, the binary dependent variable represents the presence or absence of the terminal event, and the regression first transforms the dependent into a logit variable and then uses a maximum likelihood estimate to calculate the model coefficients. These coefficients represent the change in the log odds of the dependent variable taking on the positive event. This regression is relatively simple to run and interpret. However, three drawbacks are important. First, the

[5] Linear regression is sometimes employed for panel data in which all individuals experience the terminal event. Such a regression typically uses time to terminal event as the dependent variable.

procedure is unsuited to time-varying independent variables. Second, binary logistic regression focuses on the total proportion of cases experiencing the event of interest over the entire time period of interest when arriving at its estimates. This is equivalent to assuming that right-censored cases (those cases that experience the terminal event only after the end of the observation period or, perhaps, do not experience the terminal event at all) never experience the terminal event, rather than treating these as cases in which the event is potentially experienced after the period of observation is over. In doing so, it assumes a constant hazard rate, which may or may not be true. Finally, it fails to take into account time to the terminal event, or duration, in its analysis; duration is often considered to be an important characteristic in survival analysis.

When some individuals are right-censored (i.e. the event occurs after formal observations have stopped), then the most common method for calculating the hazard rate for a data set is based on the Cox (1972) proportional hazards model (Lee and Wang 2003). Cox regression uses a partial likelihood estimate (sometimes called a maximum partial likelihood estimate), rather than the maximum likelihood estimate employed in logistic regression. The partial likelihood estimate, which is the maximum likelihood estimate of the factors remaining in the analysis after the baseline hazard is factored out, is preferred because using partial likelihood allows it to avoid using censored cases (entities which survive past the end of the tracking) in calculation of the coefficients. In Cox regression, only the uncensored cases (the non-surviving entities) determine the regression coefficients, although Cox regression estimates the baseline hazard using all cases (censored and uncensored). Also unlike logistic regression, Cox regression utilizes the duration of survival in estimation. Other methods utilizing duration of survival exist, including nonparametric methods such as Kaplan-Meier survival analysis (which is unsuited to analysis of covariates) and parametric methods (which require one to make assumptions regarding the shape of the hazard function), but their purposes and assumptions are not well-suited here because we wish to analyze covariates and have no information about the underlying shape of the hazard function. Finally, Cox regression allows for time-varying covariates, which is a benefit over other methods. Therefore, I have chosen to use the Cox regression rather than a binary logistic regression and other duration-related methods in this analysis.

The Cox Regression

The Cox regression, or the Cox proportional hazards model, as it is often called, assumes that the hazard function, $\lambda(t;\mathbf{x})$, takes the following form, which is generalized for proportional hazards:

$$\lambda(t;\mathbf{x}) = h^0(t)g(\mathbf{x}) \ .$$

In the equation, $h^0(t)$ represents the underlying hazard model over time, or baseline hazard, and $g(\mathbf{x})$ represents a function of observed covariates. In the Cox regression, deviations from the baseline hazard are determined by the value of covariates in any given time period, and the size of these deviations is proportional to the underlying trend.

To ensure a non-negative hazard, Cox regression assumes an exponential linear model for $g(\mathbf{x})$. That is, for a function with i covariates,

$$g(\mathbf{x}) = e^{\beta_1 x_1 + \beta_2 x_2 \ldots \beta_i x_i} \ .$$

If the proportional hazards assumption does not hold for a given data set, then the Cox regression can take on a stratified form.[6] The non-proportional covariate is separated into strata[7]; this process is most efficient when the non-proportional covariate can be expressed as a categorical variable that takes on a relatively small number of values. A separate baseline hazard is calculated for each stratum, but the covariates remain constant across strata. This procedure makes no assumptions about the relationships among the strata or the relationship between the strata and time; however, the researcher loses the ability to fully analyze the stratifying variable's affect on survival.

The Cox regression can also be used with independent variables that vary with time. Such variables can vary predictably or simply take on discrete values in each time period. The Cox regression with time-dependent variables maintains proportionality, although each time period becomes a stratum like those described above. When this method is selected, Cox regression assumes that the covariates are strictly exogenous (Woodbridge 2002). For an instance with *g* time periods and *i* covariates, the hazard function, $\lambda(t;\mathbf{x})$, is,

$$\lambda_g(t;\mathbf{x}) = h_g{}^0(t)e^{\beta_1\mathbf{x}_1+\beta_2\mathbf{x}_2\ldots\beta_i\mathbf{x}_i} \quad .$$

In the model used here, the coefficients on the covariates do not vary with each time period; only the baseline hazard changes.

Cox's regression is more suitable for use with flow data than for use with grouped data, in which each duration is only known to fall within a certain time interval, such as a

[6] As explained below, strata are employed when analyzing time-varying covariates.
[7] More than one non-proportional covariate can be analyzed in this manner. For two covariates, each unique combination becomes a separate stratum.

within a year, rather than on a specific day (Woodbridge 2002). These imprecise estimates of failure time can result in the appearance of ties within a data set. When using the regression with grouped data, one must remember that the partial likelihoods estimate used in the Cox procedure assumes orderable, or non-tied, event times. Some researchers have stated that, when greater than 5 percent of the observations are ties, the data can not be assumed to have insignificant bias (Prentice and Farewell 1986). However, this is a difficult standard to achieve with many data sets, including the one I employ. Three common methods of dealing with tied event times are the Breslow method, the Efron method, and the exact method. The exact method considers every possible ordering of failure times for a given set of ties and thus requires tremendous computing power for large data sets. The Breslow and Efron methods each approximate the exact method, and the Efron method is superior when the data set is heavily tied (Farewell and Prentice 1980). However, the Breslow method is the one available with the standard SPSS analysis package, and it is the one I employ here.

Data

To answer a research question related to government funding, funding stability, and funding diversification, I required a data set with comprehensive financial information. I was looking for a dataset that was larger and more representative than that used in previous research, and I also wanted to use one that had not yet been thoroughly examined by others studying similar research questions. The logical choice for this analysis was historic IRS Form 990 submissions.

Sample

IRS Form 990 submissions are a widely used source of financial information on nonprofits (Lampkin and Boris 2002) with gross revenues over $25,000. The National Center for Charitable Statistics (NCCS) compiles data for use by researchers, and its databases are the most-used source of Form 990 files for researchers because of their ease of access and use (Grønbjerg 2002). The NCCS-Guidestar National Nonprofit Research Database, also known as the "Digitized Data" is a cumulative listing of public charities filing Form 990 and Form 990-EZ from fiscal year 1998 to fiscal year 2003. The Digitized Data database is the main source of information used here to examine the relationship between funding and failure.

The Digitized Data database is unique among NCCS databases for its completeness[8]. This file includes all charities required to file with the IRS, not just a random sample of those organizations (NCCS 2006). It is the only database to include certain variables, such as the amount of government grants (line 1c), amount of direct public support (line 1a), fees and contracts from government agencies (part VII, line 93g), and Medicare/Medicaid payments (part VII, line 93f), and includes approximately 350 variables per year, whereas the NCCS Core Files database contains only 140.

Filtering Techniques

Not every nonprofit organization is required to file the Form 990. Nonprofits with gross receipts than $100,000 annually have the option of filing the Form 990EZ, although they may choose to file the regular Form 990. Since December 31, 2007,

[8] One irregularity should be noted. According to the NCCS guide, in 1998, a number of organizations were "probably missed" when the IRS began scanning Form 990s (2006).

nonprofits with gross receipts under $25,000 file have been required to file the heavily-abbreviated Form 990N. Furthermore, religious nonprofits are typically not required to file with the IRS at all (although they may choose to do so). Exceptions are made for some religiously-affiliated nonprofits, such as those that receive a majority of their revenue from serving the general public. Based on surveys of Indiana communities and comparisons to reporting databases Grønbjerg (2002) reports the surprising estimate that organizations filing IRS Form 990 account for about 10 percent of the true nonprofits in the United States (this is a decrease from previous estimates).

When composing the Digitized Database, NCCS works to avoid self-selection bias by filtering those nonprofits that are not required to file the Form 990 but choose to do so anyway. Therefore, only small nonprofits which are required to file (usually because of receiving government funds) remain in the Digitized Database. NCCS also filters those organizations with large errors in financial variables. These errors are typically "errors over $1,000,000 and a difference of more than 25 percent from expected value i.e. value of components versus totals." The complete Digitized Database prepared by NCCS includes 338,864 organizations and their 990 submissions from 1998 to 2003.

In addition to the organizations permanently filtered by NCCS, I removed organizations with other types of reporting errors from the data set. I eliminated 956 organizations (.6 percent of the data set) in which the amount recorded for government fees and contracts plus the amount recorded for Medicaid/Medicare was greater than or equal to the amount given for program service revenue, which was evidence of a mistake in reporting. I also eliminated 13,116 nonprofits that failed to report a founding year because the age of these nonprofits could not be determined for analysis.

Small organizations also posed a problem because many are intermittent filers. For organizations that periodically do not report, researchers may misinterpret a year of non-reporting as failure. To clearly distinguish organizations failing from intermittently filing organizations, only organizations with contiguous data (no missing years) from 1998 until failure were used[9]. This eliminated 181,790 organizations from the data set.

This filter mechanism also eliminates organizations that were "born" during the time period from 1999-2003. Although there may be reason to reclaim these new organizations in future data sets, the filter mechanism chosen eliminates organizations where intermittent filing may be misinterpreted as failure, and these new organizations look identical to intermittent filing organizations in their pattern of reporting following a period of non-reporting.[10] New organizations have been shown in previous research to be dissimilar to other, older, organizations in many ways. Although these cases were likely to be interesting in their own right, it was beyond the scope of this work to include new organizations.

One limitation of this filtering mechanism is that it cannot eliminate intermittent filers who chose to file only in year 1998. To avoid including intermittent filers in 1998 in the analysis, all organizations filing only in 1998 were eliminated. This criterion excluded 9,833 organizations. The weakness of this approach, of course, is that it removes organizations that truly failed in 1998 from the overall analysis.

Other organizations with potentially biasing status are noted for later analysis. Because of their special status (normally not required to file) organizations with gross

[9] Any organization which filed in year *T* but not in year *T-1* was eliminated from the data set. This applies for *T*={1999-2003}.

[10] Of course, some organizations may truly have been born and failed during the time period of 1998-2003. These organizations would be useful to keep in the analysis if they can be distinguished from intermittent reporters. The ruling date may distinguish these organizations in future research.

receipts less than $25,000 are identified with a dummy (binary) variable and are excluded from most analyses. Furthermore, because organizations with revenue less than $100,000 can typically choose to file the Form 990EZ (which does not include a separate line item for contracts, for instance), their information may not have the same level of completeness[11], and they are also noted with a dummy variable[12] (although they are included in most analyses). Another group with potential reporting problems or problems with accuracy is those organizations who reported a negative value for one of the measures of government funding; therefore, this group is identified with a dummy variable for later analysis. Furthermore, organizations which take on a negative or 0 value for percentage operations (because of revenue that is less than or equal to 0, even when an organization is operating), and identified and typically filtered when doing percentage-related calculations. Finally, as suggested by NCCS, the largest organizations in each subsector are noted as potentially biasing outliers.

The remaining data set included 133,169 organizations, 94,377 of which are included in all analyses. The number of organizations filtered at each stage is shown in Table 2A. The number of organizations taking on each of the described dummy variables is also noted in Table 2A.

[11] Among those filing the 990EZ, there may be a small number of nonprofits who receive small grants (less than the $100,000 990 filing threshold) that are coded as $0 due to way information is reported on the 990EZ form. If this were true, there would be a small number of organizations with a measurement error in the government funding variable. This issue is discussed further in this paper's limitations section.
[12] The dummy variable is based on my calculation of gross receipts using the raw data in the data set.

Table 2A: Data Set Composition

Original Data Set	338,864
Intermittent Filers/New Organizations	181,790
1998-Only Organizations	9,833
Errors in Addition of Relevant Variables	956
No Age	13,116
Included in Data Set	133,169
<$25,000 Gross Receipts (Usually filtered)	541
Large Outliers in Each Subsector (Usually filtered)	159
Negative Government Funding (Usually filtered)	73
Revenue <= $0 (Usually filtered in percentage operations)	4,076
Eligible to file 990EZ (Occasionally filtered)	35,369
Negative Private, Other Funding (Filtered in Hyp 3A – Method 2,3,4)	2,854
HHI-incompatible organizations (Filtered in Hyp 3B)	1,664
Included in All Analyses	94,377

Variables

Below, I describe the Form 990 entries used to create each of the variables used in this analysis. I compare the methods used to that used in previous research. Finally, I present some descriptive statistics on each of the included variables.

Exit

The dependent variable of interest in the majority of hypothesis is failure/closure. As discussed in Chapter 1, studying failure in nonprofit organizations is complicated by the fact that nonprofits rarely engage in a formal closure process and, when they do, this process is not consistent across organizations. Furthermore, a "failed" organization may simply be in hibernation and waiting for a funding stream to reemerge. Or, the organization may have gone out of existence, but may have fulfilled the original mission of the organization, which should not be defined as failure**.** Therefore, when interpreting the results of the analyses, I call the phenomenon "exit" to more neutrally define what has occurred when an organization is no longer reporting.

Of the 133,169 organizations in the analysis, 16.8 percent exited by 2003. Table 2B shows the last reporting year of the 22,310 organizations. Each of these organizations exited sometime between their last reporting year and the next reporting year.

Table 2B: Year of Exit for Non-Surviving Organizations

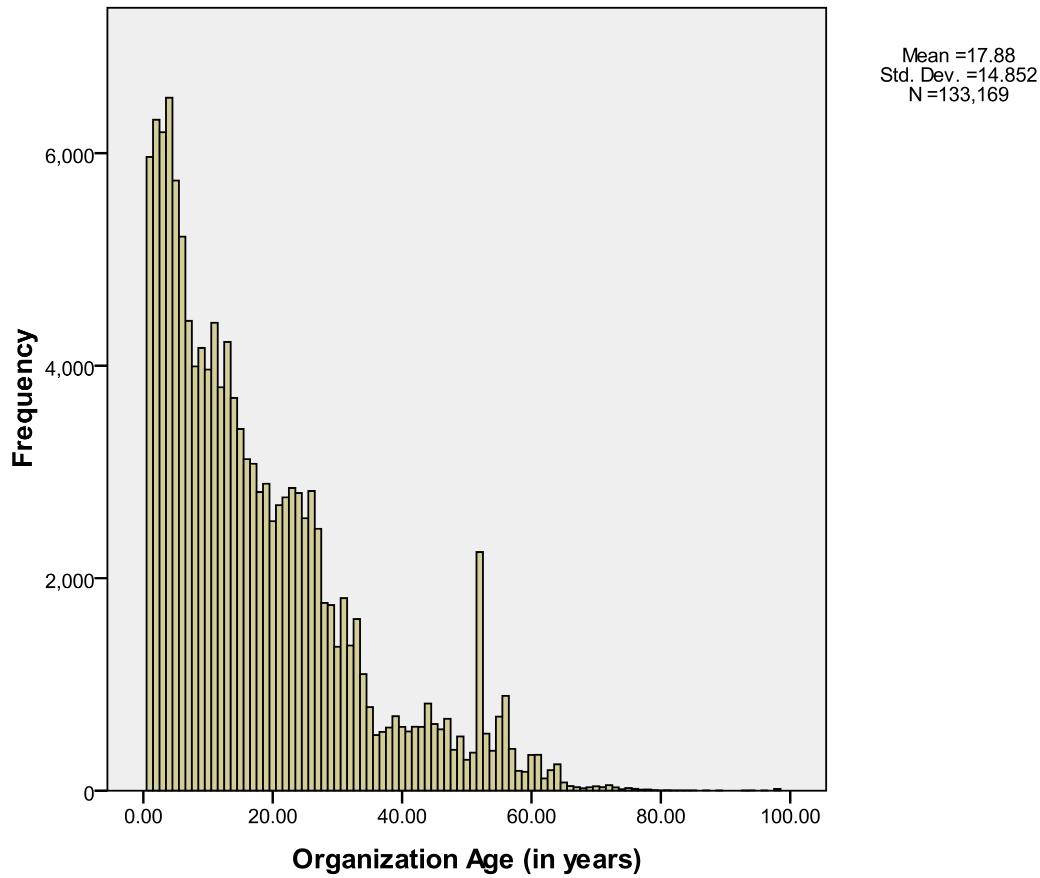
Last Reporting Year	**Number of Organizations**
1999	5368
2000	4544
2001	4450
2002	7948

Age

In this analysis, I defined the age of the organization as its age in 1998 according to on the IRS ruling date recorded in the Digitized Data database.[13] The following chart illustrates the distribution of ages in the population.

[13] The IRS ruling date is described by NCCS as "the year and month of IRS ruling or determination letter recognizing the organization's exempt status." Nonprofit status is often granted retroactively to the date of the organization's founding, but organizations are asked to report the ruling date rather than the founding date on the 990. Therefore, nonprofits may be older than the age noted in this analysis, but their ruling-based age would be expected to be ordinal-consistent with their founding-based age.

Figure 2A: Organizational Age Histogram



Although age increases over time, it progresses at a constant rate for each organization. Therefore, it was measured as a non-time-varying covariate. This is consistent with the treatment of age in other research (Hager et al. 2004). Previous research found that age is correlated with nonprofit failure (Stinchcombe 1965; Bruederl and Schuessler 1990; Barron et al. 1994). Because previous research found that the effect of age varies based on life stage of the organization (the so-called "liability of newness," "honeymoon period," and "liability of sentience" effects), I also conducted some analyses using four dummy variables based on age quartiles to avoid prejudging the functional form of the age variable.

Size

Previous research also found organization size to be correlated with nonprofit failure (Freeman et al. 1983). The size variable I use in the following hypotheses is from line 17 of the Form 990, "Total Expenses." This variable is time-dependent. Other research has defined size as amount of income, expenditures, human resources, or some combination of these measures. Past research has shown that the value of total expenses is highly correlated with other measures of size, including income (r=0.99) and number of full-time employees (r=0.99) (Hager 1999).

To adjust for inflation, Hager converted the expenditures of the nonprofits in his sample to a base year using the producer price index. I employ a similar technique to adjust for inflation using the consumer price index. Here, 1998 prices are the base year for comparison. In addition, to make interpretation of results simpler, I divided the size variable by 100,000. Therefore, all results are in units of $100,000. In addition to analyzing the time-dependent variable, I run some analyses with four dummy variables representing equal quartiles to avoid pre-judging the functional form.

Subsector

In this work, I used the 12-category National Taxonomy of Exempt Entities (NTEE) classification to represent subsector and created 12 dummy variables for analysis. This designation is useful because it includes separate categories for hospitals and institutes of higher education. The size and dollar value of reimbursements received by these two types of organizations may make them different than others receiving government funding. Table 2C shows the distribution of organizations included in the data set, by sector, in 1998. Table 2C shows that the unknown/unclassified subsector has the least number of organizations, while the human services subsector has the most.[14]

Table 2C: Frequencies of NTEE Codes

NTEE Classification	Frequency 1998	Percent 1998
Arts, Culture, and Humanities (AR)	13287	10.0%
Education (ED)	18285	13.7%
Environment and Animals (EN)	4514	3.4%
Health (HE)	18273	13.7%
Higher Education (BH)	1552	1.2%
Hospitals (EH)	3557	2.7%
Human Services (HU)	48340	36.3%
International, Foreign Affairs (IN)	1220	0.9%
Mutual/Membership Benefit (MU)	397	0.3%
Public, Societal Benefit (PU)	16653	12.5%
Religion Related (RE)	6785	5.1%
Unknown, Unclassified (UN)	306	0.2%

In previous research, the relationship between the charitable activities and exit has varied. In Hager, Galaskiewicz, and Larson (2004), subsector was not found to be significant. However, Twombly (2003) found that human service organizations with NTEE codes indicating “emergency” services were less likely to exit than “core” service providers. Therefore, I include a sector variable in this analysis. Although this work builds on the research conducted by Hager, Galaskiewicz, and Larson (2004), the sector classification system used by these researchers was not duplicated here because their scheme was created before NTEE classifications came into frequent use and cannot easily be recoded from the NTEE set used in the Digitized Data database.

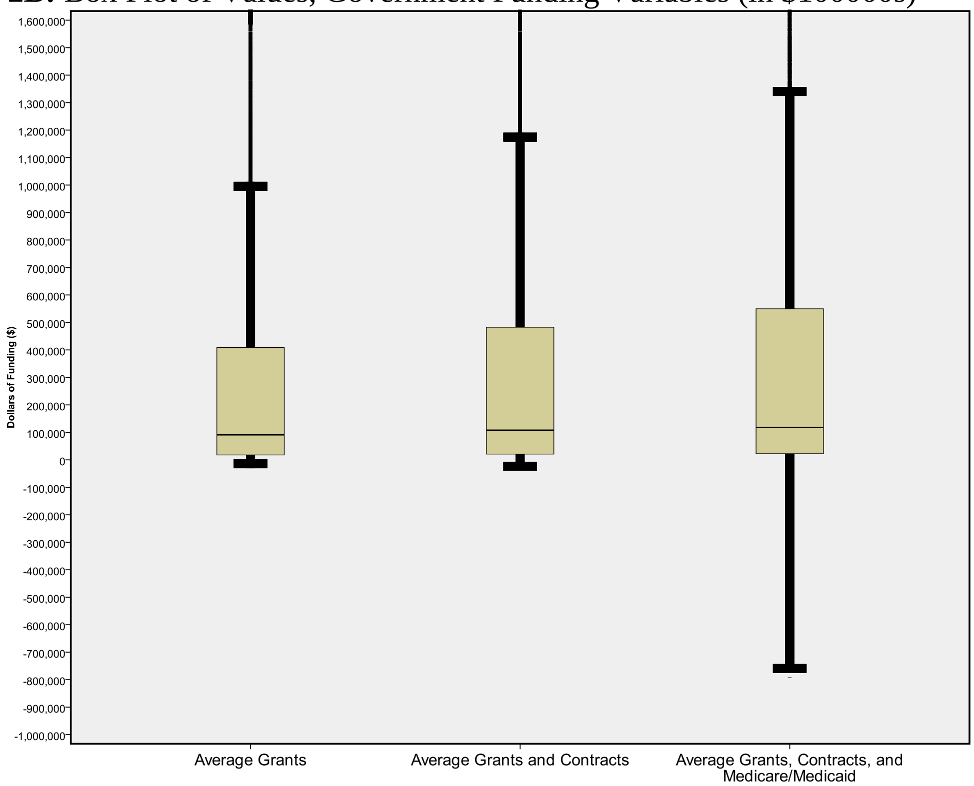
[14] Because the analysis controls for subsector, the relative weight of the different organizational types is not a factor. It is, however, important that one have sufficient observations of exit within each variable to calculate hazard rates, as this data set does.

Government Funding

In their work, Hager, Galaskiewicz, and Larson (2004) found government funding to be positively correlated with failure. Although not specifically delineated in terms of 990 categories, that research seems to define government funding as any type of government income except for income from entitlement programs like Medicare and Medicaid.

To analyze government funding for this research, I used three definitions. I present these from the least inclusive to the most inclusive definition. 1) Government grants, not including fees for services issued in a market-based manner, which I take from Form 990 line 1c. 2) Grants (1c) plus fees for service and contracts, which I take from the total of Form 990 lines 93g(b), 93g(d), and 93g(e). 3) All of the above plus Medicare and Medicaid payments, which I take from the total of lines 93f(b), 93f(d), and 93f(e). I treat these three government funding variables similar to the size variable by converting each government funding variable to 1998 dollars using the consumer price index and dividing the variable by 100,000 so that the final result is in units of $100,000. In addition to analyzing the time-dependent variable, I run some analyses with four dummy variables representing equal quartiles to avoid pre-judging the functional form. Previous researchers have speculated that non-standard functional forms are more prevalent in event history analysis because the probability of the event of interest occurring is much more likely in a certain small range of a variable (Therneau and Grambsch 2000). In my work, I regard the middle definition presented here (government grants plus contracts) as my primary definition because it is most similar to previous work and represents a middle ground in terms of inclusiveness; the other definitions are presented as alternatives.[15]

Figure 2B: Box Plot of Values, Government Funding Variables (in $100000s)



Steadiness

Although previous researchers have noted that steadiness of funding may be related to the concepts of government funding and failure, those studying government funding in nonprofits did not use a steadiness variable. Here, I use a methodology similar to that traditionally used to determine the variance and standard deviation of a measure within a population or a sample. For each variable that included steadiness as an issue, I calculated the within-organization standard deviation by calculating the sum of squared

[15] The box plot shown here includes all cases, even those where government funding is reported as negative. As stated above, those cases are usually filtered from the analyses.

differences between the annual value and the mean value, dividing this value by the number of years the nonprofit was in operation, and taking the positive square root of the result. It should be noted that, under this calculation, an organization consistently receiving no funding would have a 0 value for steadiness. Because the standard deviation of the funding can reasonably be expected to increase with the average size of funding (graphing these two variables shows a positive, roughly linear relationship), I also calculated another steadiness variable by dividing the standard deviation of the variable by the mean, which is also known as the coefficient of variation. Once again, an organization consistently receiving no funding would have a 0 coefficient of variation, the same value as organizations consistently receiving a positive amount of funding. I establish the coefficient of variation variable as the primary variable and the standard deviation variable as the alternative variable.

Private Funding

Funding sources which diversify a nonprofit's revenue, such as private funding (and other non-government funding, which I discuss next) are interesting in an analysis of government funding because of the literature surrounding crowding-in, crowding-out, resource dependence, portfolio theory, and structural embeddedness. I use two versions of the private funding concept in this work. The more limited is the sum of direct (line 1a) and indirect donations (line 1b) on the Form 990. The more complete also includes membership dues and assessments (line 3) and net income from special events (line 9c). The two definitions were necessary because membership dues and special event income often come from the same sources as individual philanthropy (individuals, corporations, and foundations) but dues and special event income are different because the funds are sometimes given in exchange for goods or services. I converted this data using the consumer price index and divided it by 100,000, which is consistent with my treatment of other absolute financial variables.

Hager, Galaskiewicz, and Larson's (2004) research includes dues and event income in the definition of private funding. That work includes the percentage of revenue rather than the absolute amount of revenue in the model. I test both in the course of this analysis. In addition to analyzing the time-dependent variable, I run some analyses with four dummy variables representing equal quartiles to avoid pre-judging the functional form.[16] I regard the definition including special events and dues as my primary variable for consistency with previous research, but analyze the amount rather than percentage of funds for consistency with my treatment of other funding variables.

Other Funding

The other funding variable is necessary to account for funding other than government income or philanthropy and will be used in hypotheses related to relative stability. Other funding includes revenues such as rents, earned income from sales of goods or services, and interest and dividends related to investments. Here, I focus on one particular interpretation of the other funding variable. I calculate this variable, which I simply term "other income," by subtracting the primary variables in each of the previously-defined categories, government grants and contracts and private funds including special events and dues, respectively.

[16] When examining these dummy variables, I do not assign negative values to a quartile. I assign zero-funded organizations to a fifth category.

This is somewhat similar to the measure of "commercial income" used by Hager, Galaskiewicz, and Larson (2004), which included the percent of revenue from "program service revenue (e.g. individual fees-for-service, private third-party payments and reimbursement from government entitlement programs like Medicaid and Medicare) and net earnings on the sale of unrelated services" (Hager et al. 2004). In that case, the measure was found to be insignificantly related to exit. Here, I am interested in both the absolute amount and percentage of other income. I treat the absolute variable similar to other financial variables by converting it to 1998 dollars using the consumer price index and dividing it by 100,000. When examining this variable, one should be aware that a certain number of negative values result from the inclusion of investment variables in this category, and the negative values are reflected in the results for percentages. In addition to analyzing the time-dependent variable, I run some analyses with four dummy variables representing equal quartiles to avoid pre-judging the functional form.[17]

Diversification

I use the sum of the squared shares of each type of revenue, known as the Hirshman/Herfindahl Index or HHI, to represent diversification. The coefficient of the HHI diversification variable is interesting because resource dependence theory (and finance theory, in which the concept is prevalent) suggests that a diversified organization would be less likely to fail. Furthermore, as I discuss in Chapter One, some literature suggests that high levels of government funding crowd out other funding sources, which would indicate lower diversification. Including a measure of diversification may dampen

[17] When examining these dummy variables, I do not assign negative values to a quartile. I assign zero-funded organizations to a fifth category.

the size of the government funding effect if it is actually operating as a proxy for diversification.

I computed the HHI using all revenue sources provided by the Form 990 rather than the aggregate values I calculated to represent such concepts as private funding and other funding. I included the Form 990 line items for direct public support (line 1a), indirect public support (line 1b), government grants (line 1c), membership dues and assessments (line 3), investment income (including income from interest on savings and temporary cash investments (line 4), dividends and cash securities (line 5), and other investments (line 7)), net rental income (6c), net sales of assets (line 8d) net income from special events (line 9c), net sales of inventory (line 10c), Medicare/Medicaid funding (each of the three variables from line 93f), government fees and contracts (each of the three variables from line 93g), and the catchall other revenue category (line 11).

The data allows HHI to be modeled as a time-dependent covariate, which is ideal to test the idea that government funding may be a proxy for diversification. However, research dependency theory would suggest that the annual values do not matter as much as the average diversification, so I test the average HHI as an alternative variable, and I also test the quartiles of this variable to avoid pre-judging the functional form. HHI values range from 0 to 1, with 1 indicating that all revenue comes from one line item and smaller values indicating revenue from a variety of line items. It is important to note that HHI allows for no negative values, so organizations reporting negative revenue in any category for a particular year do not have a HHI value for that year.[18] Furthermore, in

[18] Although the pure formula does allow negatives (they become positive when the negative share is squared) the index loses its meaning when these negative values are included. These negative revenues do not make up a real share of the organization's revenues, and are not equivalent to a positive share of the revenues.

this analysis, only nonprofits which file the 990, and not the 990EZ, are included, because the data collected by the 990EZ is not rich enough to calculate an HHI. In addition, nonprofits which erroneously reported earnings in HHI revenue subcomponents which surpassed their total revenue and, therefore, resulted in HHI values above 1, the logical threshold, are removed. Therefore, I have calculated the average HHI with the denominator including only those years in which an organization has an HHI value, not all years that an organization reported data.

Summary of Included Variables

Table 2D shows the mean, median, and standard deviation for each included variable and alternative variable. As a reminder, I also include, for some analyses, dummy variables representing presence of a funding stream or quartiles as alternative variables. The data set includes dummy variables, in which 1 indicates presence of a funding stream and 0 indicates its absence, for each of the definitions of government funding. It also includes dummy quartile variables, in which 1 indicates membership in the quartile and 0 indicates membership in another quartile, for age; size; government grants; government grants and contracts; government grants, contracts, and Medicare/Medicaid, private funding, and other funding.

Table 2D: Descriptive Values for Relevant Variables

Variable Name	# “0” Value Orgs.	Mean	Median	Std. Dev.
Age	0	17.9	14.0	14.9
Size TV (in $100,000s)	681	35.6	2.1	326.6
*Avg. Size (in $100,000s)	681	212.8	2.6	62862.5
Gov’t Grants and Contracts TV (in $10000s)	91,600	12.0	1.8	78.8
*Avg. Gov’t Grants and Contracts (in $10000s)	77,674	10.3	1.1	78.5
*Pct. Gov’t Grants and Contract TV	91,642	45.3	40.9	51.6
*Pct. Avg. Government Grants and Contracts	77,707	34.8	23.5	86.1
*Gov’t Grants TV (in $100000s)	95,675	10.7	1.5	77.9
*Avg. Government Grants (in $100000s)	81,540	9.2	.91	77.9
*Pct. Gov’t Grants TV	95,716	42.4	35.2	52.9
*Avg. Pct. Government Grants	81,572	32.4	19.1	88.7
*Gov’t Grants, Contracts, Medic. TV	90,836	15.0	1.9	114.4
*Avg. Gov’t Grants, Contracts, Medic.	76,430	13.6	1.2	107.0
*Pct. Gov’t Grants, Contracts, Medic. TV	90,878	46.0	42.5	51.3
*Avg. Pct. Gov’t Grants, Contracts, Medic.	76,463	35.6	25.0	85.3
Private Rev. w/ SpEv, Dues TV (in $100000s)	29,008	6.8	.89	67.8
*Avg. Private Rev. w/ SpEv, Dues (in $100000s)	18,564	6.8	.88	62.7
*Pct. Private Rev. w/ SpEv, Dues TV	29,133	47.5	41.6	126.5
*Avg. Pct. Private Rev. w/ SpEv, Dues	18,668	45.8	38.0	275.1
*Private Rev. TV (in $100000s)	44,097	7.2	.95	64.0
*Pct. Private Rev. TV	44,215	41.9	29.8	213.4
Other Rev. (in $100000s) TV	6,224	32.1	.75	341.6
*Avg. Other Rev. (in $100000s)	2,996	33.3	.76	354.4
*Pct. Other Rev. TV	6,005	52.6	50.9	72.3
*Avg. Pct. Other Rev.	3,184	51.8	46.6	313.8

Diversification TV	17,866	.64	.62	.27
*Average Diversification	3,972	.63	.62	.24
Steadiness Co. of Var. (Gov't Grants, Contracts)	77,674	.79	.54	.70
*Steadiness (Gov't Grants, Contracts)	77,669	3.3	.45	20.6
*Steadiness (Government Grants)	81,537	2.7	.40	18.5
*Steadiness Co. of Var. (Gov't Grants)	81,540	.82	.58	.72
*Steadiness (Gov't Grants, Contracts, Medic.)	76,396	5.7	.49	51.4
*Steadiness Co. of Var. (Gov't Grants, Contracts, Medic.)	76,430	.79	.54	.70
*Steadiness (Private Rev. w/ SpEv, Dues)	18.102	2.8	.33	29.8
*Steadiness Co. of Var. (Private Rev. w/ SpEv, Dues)	18.564	.62	.43	1.3
*Steadiness (Private Rev.)	28,829	3.0	.39	29.1
*Steadiness Co. of Var. (Private Rev.)	28,834	.72	.54	.57
*Steadiness (Other Rev.)	466	6.8	.26	87.7
*Steadiness Co. of Var. (Other Rev.)	2,997	.70	.36	7.1
*Steadiness Co of Var. (Revenue)	264	.31	.21	1.6
*Steadiness Co of Var. (Size)	251	.24	.17	.24

"0" column counts zero-value and omitted variable records (revenue<$0, HHI>1, and others).
The descriptive statistics are calculated without the zero-value and omitted variable records.
Time-variable covariates are labeled as "TV," and table shows 1998 values.
Alternate variables labeled with * symbol.

Correlations Between Included Variables

To uncover the relationships between the included variables, I tested the basic (non-alternative) variables using Pearson's correlation. I entered the initial variables into this analysis; I entered variables that are time-varying are entered as only their 1998 values because of the issues with relationships between subsequent years' values for these items and problems with missing variables in later years. Most variables displayed very low correlations. However, we find that the Size and Other Revenue variables have a high correlation, at greater than 0.9 on a 0 to 1 scale.

No variables were removed from the analyses based on this correlation, although these results will help to inform the creation of subsequent models and the interpretation of the results. Specifically, results including the Size and Other Revenue variables must be interpreted with this correlation in mind, and calculations including both variables should be examined closely because one would expect that both variables would not be significant in many instances. The results are shown in Table 2E.

Table 2E: Correlations Between Primary Variables

	Age	Size TV (in $100000s)	Gov't Grants and Contracts TV (in $10000s)	Private Rev. w/ SpEv, Dues TV (in $100000s)	Other Rev. TV (in $100000s)	Steadiness Co. of Var. (Gov't Grants, Contracts)	Diversificat-ion TV
Age	1						
Size TV (in $100000s)	.009 ***	1					
Gov't Grants, Contracts TV (in $100000s)	.006 *	.370 ***	1				
Private Rev. w/ SpEv, Dues TV (in $100000s)	.005 #	.338 ***	.313 ***	1			
Other Rev. TV (in $100000s)	.008 **	.956 ***	.266 ***	.247***	1		
Steadiness Co. of Var. (Gov't Grants, Contracts)	.008 **	.024 ***	.001	.009 **	.022 ***	1	
Diversification TV[19]	0.000	0.007*	.019***	-0.022***	0.004	-0.055 ***	1

*** Significant at the .001 level (2-tailed)
** Significant at the .01 level (2-tailed)
* Significant at the .05 level (2-tailed)
# Significant at the .1 level (2-tailed)

[19] The correlation was calculated using only those organizations that are included in the HHI-related calculations (excludes organizations with HHI<=0 or >1, as well as other normally excluded organizations.

CHAPTER 3: RESULTS

Introduction

In this chapter, I test three research questions. I chose these questions based on rationales that researchers and practitioners use to explain the relationship between government funding and failure. First, I test the basic relationship between government funding and nonprofit exit, the term I prefer to failure. I use the alternative variables to compare various definitions of government funding, absolute and relative funding amount indicators, and the effects of lagged and concurrent variable techniques. I also analyze the results of alternative statistical techniques and data set composition. Next, because the literature hypothesizes that relationships between funding sources and exit are caused by relative stability of those funding sources, I analyze the stability of government funding compared to other sources and the relationship between stability and nonprofit exit. Then, because the literature suggests nonprofits that are skilled at securing many sources of funding will be more likely to survive and because the presence of government funding may be understood as a proxy for diversified funding, I test the relationship between funding diversity and nonprofit exit. Finally, to combine these ideas, I analyze the variables I found significant in earlier tests to understand the effect of a diversified, stable funding base on nonprofit exit.

Hypothesis 1

The first hypothesis seeks to directly address the core question regarding the relationship between government funding and nonprofit exit. As I explain in Chapter 1, the literature is unclear about the relationship between government funding and nonprofit exit. Hager, Galaskiewicz, and Larson, whose analysis most closely resembles mine, found that nonprofits receiving government funding were 155 times more likely to fail than nonprofits in the population as a whole. Therefore, the one-sided alternative hypothesis tested is that the received wisdom is correct and government-funded nonprofits are more likely to fail.

Hypothesis $H_0$1: Nonprofits receiving government funding are not more likely to exit than those nonprofits without government funding.

I tested this hypothesis using a wide variety of representations of the government funding variable and other tests for robustness. In each, I examined the Digitized Data and applied a Cox regression with controls for sectors, age, and size (time-variable). First, I applied my primary, time-dependent, lagged government funding variable. Next, I used a dummy variable as Hager, Galaskiewicz, and Larson used in their research. Following this, I employed quartiles representing different funding levels to examine the functional form. Next, I used an alternative variable representing percent of funding rather than absolute value. Finally, I tested a number of alternative variables including other definitions of funding and non-lagged variables, looked at variations in the results when different sets of questionable cases were excluded from the analysis, and tested the alternative binomial logistic regression.

Method 1

The first method I employ uses a time-dependent, lagged variable for government funding. Here, I define government funding as all grants and contracts, outside of

Medicare/Medicaid funding (which is reported separately). Because of the robust data set at my disposal, I am able to perform more data-rich analysis than is possible using a dummy variable approach employed by Hager, Galaskiewicz, and Larson (2004). The results, using the data set without the "usually filtered" variables described in Chapter 2, are displayed in Table 3A.

Table 3A: Cox Regression Estimate of Hazard of Organizational Closure with Time-Dependent Government Funding

Independent Variables	β (SE)	Hazard Ratio
Arts, Culture, and Humanities (AR)	-1.047 (.093) ***	-64.9
Education (ED)	-0.953 (.092) ***	-61.4
Environment and Animals (EN)	-1.112 (.098) ***	-67.1
Health (HE)	-0.991 (.092) ***	-62.9
Higher Education (BH)	-1.233 (.120) ***	-70.8
Hospitals (EH)	-0.780 (.102) ***	-54.2
Human Services (HU)	-1.041 (.091) ***	-64.7
International, Foreign Affairs (IN)	-0.797 (.111) ***	-55.0
Mutual/Membership Benefit (MU)	-0.570 (.135) ***	-43.4
Public, Societal Benefit (PU)	-0.855 (.092) ***	-57.5
Religion Related (RE)	-0.585 (.093) ***	-44.3
Age	-0.002 (.000) ***	-0.2
Size TV (in $100000s)	-0.001 (.000) ***	-0.1
Gov't Grants and Contracts TV (in $100000s)	-0.021 (.001) ***	-2.1
-2 Log likelihood	522377.8	
- 2 LL model chi-square	826.212 ***	
Number of events (exits)	22162 of 132396	

*** p < .001 ** p < .01 * p < .05 # p < .1
Note : Standard errors in parentheses.
The NTEE category for "Unknown" is excluded, so dummy variable for NTEE subsector is in comparison to the Unknown category.

Table 3A includes the coefficient for each included variable, including a beta of -0.021 for the government funding variable. The coefficient can be understood as a hazard rate, or the probability of exit in a given period, given survival in all previous periods. It can also be understood in terms of a hazard ratio, which is the ratio of the hazard rate in one group compared to the hazard rate in a second group. (In the case of a continuous covariate, the ratio compares the hazard rate of a marginal increase of one unit to the hazard rate without the increase.) Therefore, the hazard ratio can be expressed as a percentage increase (or decrease) of the hazard rate based on presence in the dummy group or a marginal increase in the continuous variable. Here, every additional $100,000 of government funding is associated with a 2.1 percent decrease in the hazard of exit.[20] This is not the expected sign, given the work of Hager, Galaskiewicz, and Larson (2004), and, using Model 1, I fail to reject the null hypothesis.[21]

Method 2

The work by Hager, Galaskiewicz, and Larson (2004) uses a simple dummy (binary) variable to indicate the presence or absence of government funding. Here, for a more direct comparison than Model 1, I also use a dummy variable for government funding. Using the grants and contracts definition of government funding, the presence of funding was correlated with a -0.614 beta and a 45.9 percent decrease in the hazard of exit. The results are presented in Table 3B.[22]

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[20] I performed a follow-up analysis which showed, for a data set of only government-funded organizations, a $100,000 increase in either lagged, time-varying government funding was correlated with a 1 percent decrease in the hazard of exit (significant at .001 level), although the effect of an increase in size was changed for this data set, with a $100,000 increase correlated with a 0.03 percent increase in the hazard of exit.

[21] I obtain similar results using a non-filtered data set, a data set without revenues less than or equal to 0, and a more extensively filtered data set. Using the non-filtered data set, there is a beta of -0.016, indicating a decrease in the hazard of closure of 1.5 percent for those organizations receiving an additional $100,000 of government funding. Using the extensively filtered data set, a beta of -0.011 indicates a decrease in the hazard of exit of 1.1 percent for each additional $100,000 of government funding.

[22] I obtain similar results using a non-filtered data set, which shows that the presence of funding was correlated with a -0.619 beta and a 46.2 percent decrease in the hazard of exit. With an extensively filtered data set, the presence of funding was correlated with a -0.432 beta and a 35.0 percent decrease in the hazard of exit.

Table 3B: Cox Regression Estimate of Hazard of Organizational Closure with Dummy-Variable Government Funding

Independent Variables	β (SE)	Hazard Ratio
Arts, Culture, and Humanities (AR)	-0.911 (.093)***	-59.8
Education (ED)	-0.967 (.092)***	-62.0
Environment and Animals (EN)	-1.005 (.098)***	-63.4
Health (HE)	-0.935 (0.92)***	-60.7
Higher Education (BH)	-1.166 (.120)***	-68.9
Hospitals (EH)	-0.729 (.102)***	-51.8
Human Services (HU)	-0.933 (.091)***	-60.7
International, Foreign Affairs (IN)	-0.821 (.111)***	-56.0
Mutual/Membership Benefit (MU)	-0.642 (.135)***	-47.4
Public, Societal Benefit (PU)	-0.841 (.092)***	-56.9
Religion Related (RE)	-0.666 (.093)***	-48.6
Age	-0.002 (.000)***	-0.2
Size TV (in $100000s)	-0.001 (.000)***	-0.1
Gov't Grants and Contracts?	-0.614 (.015)***	-45.9
-2 Log likelihood	517256.691	
- 2 LL model chi-square	2362.601 ***	
Number of events (exits)	22162 of 132396	

*** p < .001 ** p < .01 * p < .05 # p < .1
Note : Standard errors in parentheses.
The NTEE category for "Unknown" is excluded, so dummy variable for NTEE subsector is in comparison to the Unknown category.

In contrast to the data set used by Hager, Galaskiewicz, and Larson (2004), the data set here finds a negative relationship between government funding and exit. Once again, the results of Method 2 fail to reject the null hypothesis. One possible explanation is that the smaller size of the organizations examined by previous researchers is not represented well by the functional form in Method 1 or 2, therefore I employ Method 3 and 4 to examine the functional form.

Method 3

To investigate the functional form of the hazard rate and the hazard rate for smaller organizations more closely, I divided the cases into five categories based on average amount of government funding during the time an organization was in existence from 1998-2003. Here, I grouped zero-funded organizations together[23], and I divided government-funded organizations into four quartiles (labeled in order of increasing funding). The results are presented in Table 3C.

Table 3C: Cox Regression Estimate of Hazard of Organizational Closure with Government Funding Quartiles

Independent Variables	β (SE)	Hazard Ratio
Arts, Culture, and Humanities (AR)	-0.925 (.093)***	-60.3
Education (ED)	-0.956 (.092)***	-61.6
Environment and Animals (EN)	-1.011 (.098)***	-63.6
Health (HE)	-0.912 (.092)***	-59.8
Higher Education (BH)	-1.130 (.120)***	-67.7
Hospitals (EH)	-0.752 (.012)***	-52.9
Human Services (HU)	-0.918 (.091)***	-60.1
International, Foreign Affairs (IN)	-0.807 (.111)***	-55.4
Mutual/Membership Benefit (MU)	-0.636 (.135)***	-47.1
Public, Societal Benefit (PU)	-0.831 (.092)***	-56.4
Religion Related (RE)	-0.657 (.093)***	-48.2
Age	-0.002 (.000)***	-0.2
Size TV (in $100000s)	-0.001 (.000)***	-0.1
Gov't Grants and Contracts Q1	-0.537 (.026)***	-41.6
Gov't Grants and Contracts Q2	-0.465 (.025)***	-37.2
Gov't Grants and Contracts Q3	-0.616 (.027)***	-46.0
Gov't Grants and Contracts Q4	-0.922 (.032)***	-60.2
-2 Log likelihood	517098.774	
- 2 LL model chi-square	2486.886 ***	
Number of events (exits)	22162 of 132396	

*** p < .001 ** p < .01 * p < .05 # p < .1
Note : Standard errors in parentheses.
The NTEE category for "Unknown" is excluded, so dummy variables for NTEE subsector are analyzed in comparison to the Unknown category.
The category for zero-funded organizations is excluded, so dummy variables for the quartiles of government funding are analyzed in comparison to zero-funded organizations.

As shown here, government-funded organizations in each of the four funding amount quartiles are less likely to exit than zero-funded organizations. From smallest to

[23] In the unfiltered data set, which includes some organizations with negative government funding which are subsequently grouped with the zero-funded organizations because they have less than $0 in government funding, the betas for each quartile, from smallest to largest, were -0.539, -0.465, -0.618, and -0.935, indicating that membership in the data set decreased the hazard of closure by 41.7, 37.2, 46.1, and 60.7 percent when compared to zero-funded organizations. In the extensively filtered data set, the betas for each quartile, from smallest to largest, were -0.419, -0.340, -0.345, and -0.631 indicating that membership in the data set decreased the hazard of closure by 34.2, 28.8, 29.2, and 46.8 percent when compared to zero-funded organizations.

largest, the quartiles have 41.6, 37.2, 46.0, and 60.2 percent decreases in the hazard of exit, when compared to zero-funded organizations.[24] This shows that the organizations with the least funding are actually less likely to exit than those in the second quartile of government funding, which would not support a log-linear functional form, which is the standard assumption. Method 3 also fails to reject the null hypothesis and differs from the previously published work by Hager, Galaskiewicz, and Larson (2004). However, the data set used in the previously published work focused on organizations that were small in size, not only small in funding amount, and I therefore examine relative funding size in Method 4.

Method 4

The previous analyses deal with the amount of government funding. However, a government grant of $100,000 has a different effect on an organization with a budget of $750,000 than is has on an organization with a budget of $7,500,000. Therefore, I next run a Cox regression considering the amount of government funding as a percentage of total funding rather than an absolute value. The percentage variable is also examined using quartiles to better understand the functional form. For both of these procedures, I use a data set excluding usually filtered variables and revenues less than or equal to zero.[25] The results are presented in Table 3D (time-varying percentage) and Table 3E (quartiles from average percentage).

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[24] I performed a follow-up analysis which showed, for a data set of only government-funded organizations, a similar pattern of hazard ratios.
[25] I wish to avoid labeling negatively-valued percentages and percentages which erroneously show a result of zero because of a division by 0 problem.

Table 3D: Cox Regression Estimate of Hazard of Organizational Closure with Time-Dependent Government Funding as Percent of Revenue

Independent Variables	β (SE)	Hazard Ratio
Arts, Culture, and Humanities (AR)	-1.052 (.094) ***	-65.1
Education (ED)	-0.956 (.093) ***	-61.6
Environment and Animals (EN)	-1.114 (.099) ***	-67.2
Health (HE)	-1.000 (.093) ***	-63.2
Higher Education (BH)	-1.260 (.121) ***	-71.6
Hospitals (EH)	-0.730 (.103) ***	-51.8
Human Services (HU)	-1.039 (.092) ***	-64.6
International, Foreign Affairs (IN)	-0.828 (.113) ***	-56.3
Mutual/Membership Benefit (MU)	-0.564 (.137) ***	-43.1
Public, Societal Benefit (PU)	-0.851 (.093) ***	-57.3
Religion Related (RE)	-0.599 (.095) ***	-45.1
Age	-0.002 (.000) ***	-0.2
Size TV (in $100000s)	-0.002 (.000) ***	-0.2
Gov't Grants and Contracts Pct. TV	-0.005 (.000) ***	-0.5
-2 Log likelihood	502629.2	
- 2 LL model chi-square	885.4 ***	
Number of events (exits)	21531 of 128779	

*** p < .001 ** p < .01 * p < .05 # p < .1

Note : Standard errors in parentheses.

The NTEE category for "Unknown" is excluded, so dummy variable for NTEE subsector is in comparison to the Unknown category.

Table 3E: Cox Regression Estimate of Hazard of Organizational Closure with Government Funding as Percent of Revenue Quartiles

Independent Variables	β (SE)	Hazard Ratio
Arts, Culture, and Humanities (AR)	-0.880 (.094)***	-58.5
Education (ED)	-0.953 (.093)***	-61.4
Environment and Animals (EN)	-0.987 (.099)***	-62.7
Health (HE)	-0.940 (.093)***	-60.9
Higher Education (BH)	-1.101 (.121)***	-66.7
Hospitals (EH)	-0.690 (.103)***	-49.8
Human Services (HU)	-0.946 (.092)***	-61.2
International, Foreign Affairs (IN)	-0.823 (.113)***	-56.1
Mutual/Membership Benefit (MU)	-0.624 (.137)***	-46.4
Public, Societal Benefit (PU)	-0.826 (.093)***	-56.2
Religion Related (RE)	-0.657 (.095)***	-48.1
Age	-0.002 (.000)***	-0.2
Size TV (in $100000s)	-0.001 (.000)***	-0.1
Gov't Grants and Contracts Pct. Q1	-0.871 (.031)***	-58.1
Gov't Grants and Contracts Pct. Q2	-0.671 (.028)***	-48.9
Gov't Grants and Contracts Pct. Q3	-0.589 (.027)***	-44.5
Gov't Grants and Contracts Pct. Q4	-0.433 (.025)***	-35.1
-2 Log likelihood	501053.2	
- 2 LL model chi-square	2526.1 ***	
Number of events (exits)	21531 of 128779	

*** p < .001 ** p < .01 * p < .05 # p < .1
Note : Standard errors in parentheses.
The NTEE category for "Unknown" is excluded, so dummy variables for NTEE subsector are analyzed in comparison to the Unknown category.
The category for zero-funded organizations is excluded, so dummy variables for the quartiles of government funding percentage are analyzed in comparison to zero-funded organizations.

The continuous variable has a beta of -0.005[26] and demonstrates that every 1 percent of additional funding decreases the hazard of exit by 0.5 percent. The results of the quartile analysis included decreased betas for several of the sector variables and the size variable. However, more interesting is the results for the quartiles. The betas for the funding quartiles were -0.865, -0.658, -0.577, and –.427. This indicates that organizations in the smallest quartiles of government funding actually had the biggest

[26] With the unfiltered data set, the variable has a beta of -0.005 and each 1 percent increase in government funding decreases the hazard of closure by 0.5 percent. For the more extensively filtered data set, the variable has a beta of -0.002 and each 1 percent increase in government funding decreases the hazard of closure by 0.2 percent.

decrease in hazard of failure (67.9% decrease) compared to non-government-funded organizations. It also indicates that the negative beta in Table 3D is capturing the effect of the presence of government funding as well as the marginal effect of funding increases. Although Model 4 fails to reject the null hypothesis just as Models 1, 2, and 3 did, it also begins to uncover a more nuanced view of the effects of government funding.

Because of the results of Model 4, I conducted a sensitivity analysis to separate the effects of the presence of government funding from the effects of funding increases. I replicated the analysis for Model 4 using a data set of only government-funded organizations. Based on the results of Model 4, I would expect that, when government-funded organizations are compared only to other government-funded organizations, additional proportions of revenue would lead to an increase in the hazard of failure. The results are presented in Table 3F.

Table 3F: Only Government-funded Organizations, Cox Regression Estimate of Hazard of Closure with Time-Dependent Government Funding as Percent of Revenue

Independent Variables	β (SE)	Hazard Ratio
Arts, Culture, and Humanities (AR)	-1.313 (0.200) ***	-73.1
Education (ED)	-1.256 (0.201) ***	-71.5
Environment and Animals (EN)	-1.334 (0.208) ***	-73.7
Health (HE)	-1.275 (0.199) ***	-72.1
Higher Education (BH)	-1.638 (0.240) ***	-80.6
Hospitals (EH)	-1.121 (0.221) ***	-67.4
Human Services (HU)	-1.266 (0.197) ***	-71.8
International, Foreign Affairs (IN)	-1.161 (0.259) ***	-68.7
Mutual/Membership Benefit (MU)	-1.996 (0.734) **	-86.4
Public, Societal Benefit (PU)	-1.086 (0.200) ***	-66.2
Religion Related (RE)	-0.964 (0.225) ***	-61.9
Age	-0.003 (0.001) **	-0.3
Size TV (in $100000s)	-0.001 (0.000) ***	-0.1
Gov't Grants and Contracts Pct. TV	0.000 (0.000) ***	0.0
-2 Log likelihood	132456.7	
- 2 LL model chi-square	194.130 ***	
Number of events (exits)	6100 of 54772	

*** p < .001 ** p < .01 * p < .05 # p < .1

Note : Standard errors in parentheses.

The NTEE category for "Unknown" is excluded, so dummy variable for NTEE subsector is in comparison to the Unknown category.

This analysis shows marginal increase in average percent of government funding led to a very small (the 0.0 shown in the hazard rate column is actually a positive result of less than 0.05 percent) positive percent increase in the hazard of failure (significant at the .001 level). This result is consistent with the pattern that emerged in Table 3E. It is useful to examine this result more carefully using quartiles formed from the percent of government funding.

Table 3G: Only Government-funded Organizations, Cox Regression Estimate of Hazard of Closure with Government Funding as Percent of Revenue Quartiles

Independent Variables	β (SE)	Hazard Ratio
Arts, Culture, and Humanities (AR)	-1.239 (0.200) ***	-71.0
Education (ED)	-1.236 (0.201) ***	-70.9
Environment and Animals (EN)	-1.282 (0.208) ***	-72.3
Health (HE)	-1.290 (0.199) ***	-72.5
Higher Education (BH)	-1.507 (0.240) ***	-77.8
Hospitals (EH)	-0.958 (0.221) ***	-61.6
Human Services (HU)	-1.285 (0.197) ***	-72.3
International, Foreign Affairs (IN)	-1.122 (0.259) ***	-67.4
Mutual/Membership Benefit (MU)	-1.995 (0.734) ***	-86.4
Public, Societal Benefit (PU)	-1.090 (0.200) ***	-66.4
Religion Related (RE)	-0.906 (0.225) ***	-59.6
Age	-0.003 (0.001) **	-0.3
Size TV (in $100000s)	-0.001 (0.000) ***	-0.1
Gov't Grants and Contracts Pct. Q2	0.229 (0.040) ***	25.8
Gov't Grants and Contracts Pct. Q3	0.312 (0.040) ***	36.6
Gov't Grants and Contracts Pct. Q4	0.462 (0.039) ***	58.7
-2 Log likelihood	132327.5	
- 2 LL model chi-square	282.5 ***	
Number of events (exits)	6100 of 54772	

*** p < .001 ** p < .01 * p < .05 # p < .1
Note : Standard errors in parentheses.
The NTEE category for "Unknown" is excluded, so dummy variables for NTEE subsector are analyzed in comparison to the Unknown category.
The category for the lowest-percentage organizations is excluded, so dummy variables for the quartiles of government funding percentage are analyzed in comparison to Q1 organizations.

As Table 3G shows, when only government-funded organizations are analyzed, an increase in the percentage of government funds for the first time allows one to reject the null hypothesis. For the largest quartile of government funding, there is a 58.7 increased hazard of failure when compared to the smallest quartile of government funding.

Alternative Methods and Variables – Lagged Variables

The Cox regression can either be calculated with the funding level for the current year or the previous year's funding level as the variable of interest. I next use a Cox regression to consider government grant and contract funding in a particular period, rather than funding lagged one year. I use the usually filtered dataset for this analysis. Although the regression corresponding to Model 1 above did not converge[27], the regression corresponding to Model 4 (based on the percent of government funds) did. The results are presented in Table 3H.

Table 3H: Cox Regression Estimate of Hazard of Closure with Non-Lagged, Time-Dependent Government Funding

Independent Variables	β (SE)	Hazard Ratio
Arts, Culture, and Humanities (AR)	-1.000 (.093) ***	-63.2
Education (ED)	-0.934 (.092) ***	-60.7
Environment and Animals (EN)	-1.056 (.098) ***	-65.2
Health (HE)	-0.846 (.092) ***	-57.1
Higher Education (BH)	-1.019 (.119) ***	-63.9
Hospitals (EH)	-0.785 (.103) ***	-54.4
Human Services (HU)	-0.886 (.091) ***	-58.8
International, Foreign Affairs (IN)	-0.797 (.111) ***	-54.9
Mutual/Membership Benefit (MU)	-0.587 (.135) ***	-44.4
Public, Societal Benefit (PU)	-0.810 (.092) ***	-55.5
Religion Related (RE)	-0.648 (.093) ***	-47.7
Age	-0.002 (.000) ***	-0.2
Nonlag Size TV (in $100000s)	-0.006 (.000) ***	-0.6
Nonlag Gov't Grants and Contracts Pct. TV (in $100000s)	-0.022 (.000) ***	-2.2
-2 Log likelihood	512287.7	
- 2 LL model chi-square	1746.4 ***	
Number of events (exits)	22162 of 132396	

*** p < .001 ** p < .01 * p < .05 # p < .1
Note : Standard errors in parentheses.
The NTEE category for "Unknown" is excluded, so dummy variable for NTEE subsector is in comparison to the Unknown category.

The two variables which the change in lagging affects are the size and government grants and contracts variables. The size beta is -0.006, showing a 0.6 percent decrease in the hazard of exit for each $100,000 in additional expenditures. The government variable had a beta of -0.022, corresponding with a 2.2 percent decrease in

[27] Did not lead to a valid result in the number of iterations given.

the hazard of exit for each additional $100,000 in government funding. These can be compared to the values for Model 1, which included a decrease in the hazard of exit of 0.2 percent for size and 0.5 percent for government funding.

The regressions including non-lagged variables corresponding to Model 2 and Model 3 also converged, although the direction of the change between the lagged and non-lagged variables was inconsistent with Model 4. The regression corresponding to Model 2 had a Beta of -0.567, indicating a decrease of 43.3 percent in the hazard of exit for organizations with government funding. (The lagged model had a corresponding decrease of 45.9 percent). The quartiles in the regression corresponding to Model 3 had Betas of -0.533, -0.454, -0.590, and -0.750, corresponding with respective decreases in the hazard of exit of 41.3, 36.5, 44.6, and 52.7 percent. (The lagged model had corresponding decreases of 41.6, 37.2, 46.0, and 60.2 percent.)

Alternative Methods and Variables – Government Funding Definition

The correlation between government funding and nonprofit exit have been consistently negative when considering grant and contract funding. However, government funding can also be defined as only funding from contracts, or funding from contracts, grants, as well as Medicare and Medicaid. First, I calculate the results of Model 1 when government funding is defined as grants. The results are shown in Table 3I.

Table 3I: Cox Regression Estimate of Hazard of Organizational Closure with Time-Dependent Government Funding (Defined as Grants)

Independent Variables	β (SE)	Hazard Ratio
Arts, Culture, and Humanities (AR)	-1.045 (.093) ***	-64.8
Education (ED)	-0.953 (.092) ***	-61.4
Environment and Animals (EN)	-1.112 (.098) ***	-67.1
Health (HE)	-0.995 (.092) ***	-63.0
Higher Education (BH)	-1.222 (.120) ***	-70.5
Hospitals (EH)	-0.768 (.102) ***	-53.6
Human Services (HU)	-1.046 (.091) ***	-64.9
International, Foreign Affairs (IN)	-0.796 (.111) ***	-54.9
Mutual/Membership Benefit (MU)	-0.568 (.135) ***	-43.3
Public, Societal Benefit (PU)	-0.855 (.092) ***	-57.5
Religion Related (RE)	-0.585 (.093) ***	-44.3
Age	-0.002 (.000) ***	-0.2
Size TV (in $100000s)	-0.001 (.000) ***	-0.1
Gov't Grants TV (in $100000s)	-0.023 (.001) ***	-2.3
-2 Log likelihood	518521.082	
- 2 LL model chi-square	829.490 ***	
Number of events (exits)	22162 of 132396	

*** p < .001 ** p < .01 * p < .05 # p < .1

Note : Standard errors in parentheses.

The NTEE category for "Unknown" is excluded, so dummy variable for NTEE subsector is in comparison to the Unknown category.

The beta for the definition of government funding including only grants is -0.023, corresponding to a decrease in the hazard of exit of 2.3 percent for each additional $100,000 in grants. This is a larger decrease than the 2.1 percent associated with grants and contracts.

Next, I calculate the results of Model 1 when government funding is defined as grants, contracts, and Medicare/Medicaid funding. The results are shown in Table 3J.

Table 3J: Cox Regression Estimate of Hazard of Organizational Closure with Time-Dependent Government Funding (Defined as Grants, Contracts, Medicare/Medicaid)

Independent Variables	β (SE)	Hazard Ratio
Arts, Culture, and Humanities (AR)	-1.053 (.093) ***	-65.1
Education (ED)	-0.962 (.092) ***	-61.8
Environment and Animals (EN)	-1.120 (.098) ***	-67.4
Health (HE)	-1.016 (.092) ***	-63.8
Higher Education (BH)	-1.268 (.120) ***	-71.9
Hospitals (EH)	-0.741 (.102) ***	-52.3
Human Services (HU)	-1.069 (.091) ***	-65.7
International, Foreign Affairs (IN)	-0.809 (.111) ***	-55.5
Mutual/Membership Benefit (MU)	-0.566 (.135) ***	-43.2
Public, Societal Benefit (PU)	-0.868 (.092) ***	-58.0
Religion Related (RE)	-0.583 (.093) ***	-44.2
Age	-0.002 (.000) ***	-0.2
Size TV (in $100000s)	-0.001 (.000) ***	-0.1
Gov't Grants, Contracts, and Medicare/Medicaid TV (in $100000s)	-0.006 (.001) ***	-0.6
-2 Log likelihood	518837.302	
- 2 LL model chi-square	727.048 ***	
Number of events (exits)	22162 of 132396	

*** p < .001 ** p < .01 * p < .05 # p < .1
Note : Standard errors in parentheses.
The NTEE category for "Unknown" is excluded, so dummy variable for NTEE subsector is in comparison to the Unknown category.

The beta for the definition of government funding including only grants is -0.006, corresponding to a decrease in the hazard of exit of 0.6 percent for each additional $100,000 in grants. This is a smaller decrease than the 2.1 percent associated with grants and contracts. Therefore, each of the two alternative definitions is consistent with the primary definition and likewise allows us to reject the null hypothesis.

Alternative Methods and Variables – Binary Logistic Regression

Although a Cox regression is the typical means of analyzing survival, binary logistic regression is sometimes used, as discussed in Chapter 2. I calculate this alternative regression here to show that the results are not sensitive to the method of analysis. The results of the binary logistic regression, in which exit is the dependent variable and the independent variables include sectors, age, the average size, and the average government grant and contract funding, are shown in Table 3K.

Table 3K: Binary Logistic Regression with Government Funding as a Predictor Variable for Organizational Closure

Independent Variables	β (SE)	Hazard Ratio
Constant	-0.333 (.117)**	
Arts, Culture, and Humanities (AR)	-1.263 (.120) ***	-71.7
Education (ED)	-1.161 (.119) ***	-68.7
Environment and Animals (EN)	-1.335 (.124) ***	-73.7
Health (HE)	-1.206 (.119) ***	-70.1
Higher Education (BH)	-1.481 (.144) ***	-77.3
Hospitals (EH)	-0.992 (.129) ***	-62.9
Human Services (HU)	-1.257 (.118) ***	-71.6
International, Foreign Affairs (IN)	-0.983 (.138) ***	-62.6
Mutual/Membership Benefit (MU)	-0.704 (.165) ***	-50.5
Public, Societal Benefit (PU)	-1.050 (.119) ***	-65.0
Religion Related (RE)	-0.739 (.121) ***	-52.3
Age	-0.002 (.001) ***	-0.2
AVG Size (in $100000s)	-0.001 (.000) ***	-0.1
AVG Gov't Grants and Contracts (in $100000s)	-0.022 (.001) ***	-2.2
-2 Log likelihood	118216.030	
Cox & Snell R Square	.010	
Nagelkerke R Square	.018	
Number of events (exits)	22162 of 132396	

*** p < .001 ** p < .01 * p < .05 # p < .1
Note : Standard errors in parentheses.
The NTEE category for "Unknown" is excluded, so dummy variable for NTEE subsector is in comparison to the Unknown category.

Like the Cox regression, the binary logistic regression fails to reject the null hypothesis. The binary logistic regression produced a Beta of -0.022, indicating that each additional $100,000 in average grant and contract funding decreased the odds of exit by 2.2 percent (significant at the 0.001 level).

Hypothesis 2

According to structural embeddedness theories, the funding with a greatest affect on survival should be funding with characteristics that affect reliance of an organization on that funding source, including source size or long period of source stability. As discussed in Chapter 1, the most common difference cited between government funding and other revenue streams is the relative stability or instability of the government funds, although there is disagreement in the literature about how government funding compares to the other forms of funding. (See “Organizational Adaptation and Government Funding Stability” in Chapter 1.) Therefore, I next analyze the stability of government funding compared to other sources and the relationship between stability and nonprofit exit.

Hypothesis $H_0$2A: Government funding and other types of funding received by individual nonprofits are equally stable over time.

To determine the relative stability of government funding, I begin by calculating the stability, for each organization, of funding over time, as I describe in the “Steadiness” section of Chapter 2. Each organization, therefore, has a standard deviation and a coefficient of variation for every funding type, including government grants; government grants and contracts; government grants, contracts, and Medicare/Medicaid payments; donated income with special events and dues; and other income.

To test the hypothesis of equal stability, I must test the equality of means of the variables of interest, specifically examining the government variables in relationship to the donated and other income variables. To test the equality of means of the within-organization standard deviations, a non-parametric test is most appropriate because the variables cannot be assumed to be normally distributed.[28] For the coefficient of variation variables, a parametric test is most appropriate, because dividing the standard deviation of the organization's funding over time by the organization's within-variable mean created a more normal distribution for 3 of the 5 variables.[29]

Among the various tests, those designed for paired variables are most appropriate because the variables being analyzed both exist within the same nonprofit. A second reason for treating the variables as paired stems from the likely correlation among the variables according to the research on crowding-in and crowding-out. Here, I choose a nonparametric Wilcoxson Signed Ranks test for the standard deviation data (Table 3L) and the paired sample t-test for the coefficient of variation data (Table 3M), which is mostly normal, except for the Donated and Other Funding variables. Cases are excluded pairwise.

[28] The lack of normality is indicated, in a cursory way, by observation of the mean and median values for these variables, and I confirm this non-normal distribution through tests revealing the skewness and kurtosis of the data. (Skewness ranges from 29.3 to 76.0, while kurtosis ranges from 1,280 to 8,013.

[29] The three government variables have skewness ranging from 2.0 to 2.1 and kurtosis ranging from 3.0 to 3.2. The donated revenue variable skewness rose to 109.4 (kurtosis of 19,368), while the other revenue variable skewness rose to 124.1 (kurtosis of 20,095).

Table 3L: Wilcoxson Signed Ranks Test Comparing Standard-Deviation-Based Steadiness for Major Types of Nonprofit-Organization Funding

Steadiness (Variable)	**Var. Mean**	**Var. Med-ian**	**Var. Std. Dev.**	**Test Statistics**	**N[30]**
Steadiness (Government Grants)	2.38	.39	10.43	-15.406[b] ***	25784
Steadiness (Gov't Grants, Contracts)	2.97	.45	14.58		
Steadiness (Government Grants)	2.38	.39	10.43	-17.326[b] ***	25784
Steadiness (Gov't Grants, Contracts, Medic.)	5.01	.48	37.84		
Steadiness (Gov't Grants, Contracts)	2.97	.45	14.58	-12.910[b] ***	27718
Steadiness (Gov't Grants, Contracts, Medic.)	5.01	.48	37.84		
Steadiness (Government Grants)	2.38	.39	10.43	-3.326[b] ***	24028
Steadiness (Private Rev. w/ SpEv, Dues)	2.49	.33	21.55		
Steadiness (Gov't Grants, Contracts)	2.97	.45	14.58	-6.854[a] ***	25396
Steadiness (Private Rev. w/ SpEv, Dues)	2.49	33	21.55		
Steadiness (Gov't Grants, Contracts, Medic.)	5.01	.48	37.84	-14.064[a] ***	25894
Steadiness (Private Rev. w/ SpEv, Dues)	2.49	.33	21.55		
Steadiness (Government Grants)	2.38	.39	10.43	-2.396[b] *	25659
Steadiness (Other Rev.)	6.39	.26	76.40		
Steadiness (Gov't Grants, Contracts)	2.97	.45	14.58	-0.006[a]	27584
Steadiness (Other Rev.)	6.39	.26	76.40		
Steadiness (Gov't Grants, Contracts, Medic.)	5.01	.48	37.84	-7.552[a] ***	28187
Steadiness (Other Rev.)	6.39	.26	76.40		

Note: a = based on positive ranks; b=based on negative ranks
Significance: *** p < .001 ** p < .01 * p < .05 # p < .1

[30] This analysis was conducted with non-zero values in a 10% sample of the usually included variables, which is the reason for the small N variables.

Table 3M: Paired Sample T-Test Comparing Coefficient-of-Variation-Based Steadiness for Major Types of Nonprofit-Organization Funding

Steadiness Co. of Var. (Variable)	Var. Mean	Var. Std. Dev.	Difference of Mean (1^{st}-2^{nd})	Std. Dev	95% CI Low-er	95% CI Up-per	t	N	Corre-lation
Steadiness Co. of Var. (Gov't Grants)	.822 (.003)	.715	.041 (.001) ***	.232	.039	.043	40.2	51372	.946 ***
Steadiness Co. of Var. (Gov't Grants, Contracts)	.781 (.003)	.696							
Steadiness Co. of Var. (Gov't Grants)	.822 (.003)	.715	.045 (.001) ***	.255	.043	.047	40.1	51371	.935 ***
Steadiness Co. of Var. (Gov't Grants, Contracts, Medic.)	.777 (.003)	.692							
Steadiness Co. of Var. (Gov't Grants, Contracts)	.791 (.003)	.697	.007 (.001) ***	.124	.006	.008	13.8	55224	.984 ***
Steadiness Co. of Var. (Gov't Grants, Contracts, Medic.)	.784 (.003)	.691							
Steadiness Co. of Var. (Gov't Grants)	.832 (.003)	.714	.228 (.005) ***	1.175	.217	.238	42.3	47820	.056 ***
Steadiness Co. of Var. (Private Rev. w/ SpEv, Dues)	.605 (.004)	.974							
Steadiness Co. of Var. (Gov't Grants, Contracts)	.801 (.003)	.696	.193 (.006) ***	1.25	.182	.204	34.7	50531	.047 ***
Steadiness Co. of Var. (Private Rev. w/ SpEv, Dues)	.608 (.005)	1.069							
Steadiness Co. of Var. (Gov't Grants, Contracts, Medic.)	.802 (.003)	.694	.190 (.005) ***	1.24	.179	.200	34.7	51547	.048 ***
Steadiness Co. of Var. (Private Rev. w/ SpEv, Dues)	.612 (.005)	1.062							
Steadiness Co. of Var. (Gov't Grants)	.825 (.003)	.715	.324 (.080) ***	18.0	.168	.480	4.07	51139	-0.004
Steadiness Co. of Var. (Other Rev. w/out Gov't, Private)	.501 (.079)	18.0							
Steadiness Co. of Var. (Gov't Grants, Contracts)	.794 (.003)	.697	.278 (.074) ***	17.4	.133	.423	3.75	54963	-0.002
Steadiness Co. of Var. (Other Rev. w/out Gov't, Private)	.516 (.074)	17.3							
Steadiness Co. of Var. (Gov't Grants, Contracts, Medic.)	.795 (.003)	.695	.286 (.072) ***	17.2	.144	.428	3.95	56202	-0.002
Steadiness Co. of Var. (Other Rev. w/out Gov't, Private)	.510 (.072)	17.2							

Note: Standard errors of the Mean and of the Difference of Mean are in parentheses.
Significance: *** p < .001 ** p < .01 * p < .05 # p < .1

Table 3L shows that the government funding definition including government grants tends to have a smaller standard deviation than the one including grants and contracts, which in turn tends to have a smaller standard deviation than the one including grants, contracts, and Medicare/Medicaid. Each of these differences is significantly different from 0 at the .001 level. The private funding variable (which includes special events and dues) has a larger mean standard deviation than the government funding definition including only grants, but a smaller mean standard deviation than the government funding definition including grants and contracts and the definition including grants, contracts, and Medicare/Medicaid. Each of these pairs' differences is significantly different from 0 at the .001 level. For the other funding variable, the government funding variable including only grants is smaller and is significantly different from 0 at the .05 level. The government funding variable including grants, contracts, and Medicare/Medicaid is larger than the other funding variable and is significantly different from 0 at the .001 level. The remaining definition is not significant. I therefore reject the null hypothesis of equal steadiness, represented by standard deviations, for all but one of the pairs.

Table 3M shows that each of the government funding variable definitions is less steady than the private and other funding variables. Even taking into account the correlation of the variables, the government funding variable including only grants shows the least steadiness; this is followed by the variable including grants and contracts; this followed by the variable including grants, contracts, and Medicare/Medicaid definition, which has the greatest steadiness of the three. Because all results were shown to be significant at the .001 level, we can reject the null hypotheses that there is no difference in steadiness.

Hypothesis $H_0$2B: Among those nonprofits with government funding, those with unsteady government funding are equally or less likely to fail than those with steady funding.

As discussed previously, the relative steadiness or unsteadiness of government funding is often discussed as a reason for the difference in failure for government-funded nonprofits. If steadiness of a funding source impacts the failure rate of those nonprofits receiving it, then government-funded nonprofits with less steady government funding should have increased failure rates. To test this hypothesis, I conduct a Cox regression including the coefficient of variation for the government funding variable to represent steadiness. As an alternative measure, I include the standard deviation for the government funding variable.

Method 1

I first analyze the hypothesis using the coefficient of variation of the government funding variable to represent steadiness. The results are shown in Table 3N.

Table 3N: Cox Regression Estimate of Hazard of Organizational Closure with Time-Dependent Government Funding and Coefficient-of-Variation-Based Government Funding Steadiness

Independent Variables	β (SE)	Hazard Ratio
Arts, Culture, and Humanities (AR)	-0.959 (.093) ***	-61.7
Education (ED)	-0.967 (.092) ***	-62.0
Environment and Animals (EN)	-1.013 (.098) ***	-63.7
Health (HE)	-0.962 (.092) ***	-61.8
Higher Education (BH)	-1.222 (.120) ***	-70.5
Hospitals (EH)	-0.744 (.102) ***	-52.5
Human Services (HU)	-0.985 (.091) ***	-62.7
International, Foreign Affairs (IN)	-0.796 (.111) ***	-54.9
Mutual/Membership Benefit (MU)	-0.628 (.135) ***	-46.6
Public, Societal Benefit (PU)	-0.840 (.092) ***	-56.8
Religion Related (RE)	-0.647 (.093) ***	-47.6
Age	-0.002 (.000) ***	-0.2
Size TV (in $100000s)	-0.001 (.000) ***	-0.1
Gov't Grants and Contracts TV (in $100000s)	-0.020 (.001) ***	-2.0
Steadiness Co. of Var. (Gov't Grants, Contracts)	-0.500 (.015) ***	-39.3
-2 Log likelihood	517148.978	
- 2 LL model chi-square	1961.679 ***	
Number of events (exits)	22162 of 132396	

*** p < .001 ** p < .01 * p < .05 # p < .1
Note : Standard errors in parentheses.
The NTEE category for "Unknown" is excluded, so dummy variable for NTEE subsector is in comparison to the Unknown category.

The above results show that the coefficient of variation has a beta of -0.500, showing a decrease in the odds of exit of 39.3 percent for every additional 1 coefficient of variation (a variation equal to the average amounts of grants and contracts). This is an unexpected result, which is essentially indicating that nonprofits with less steady revenues are less likely to exit (and more likely to survive). Based on additional research into the previous methods used to demonstrate steadiness (by Kingma and others), there is reason to suspect that this result is an effect of misspecification. Based only on the results of the analysis and the current method of calculating the steadiness variable, I fail to reject the null hypothesis.

Method 2

I next analyze the hypothesis using the standard deviation of the government funding variable to represent steadiness. The results are shown in Table 3O.

Table 3O: Cox Regression Estimate of Hazard of Organizational Closure with Time-Dependent Government Funding and Standard-Deviation-Based Government Funding Steadiness

Independent Variables	β (SE)	Hazard Ratio
Arts, Culture, and Humanities (AR)	-1.042 (.093) ***	-64.7
Education (ED)	-0.951 (.092) ***	-61.4
Environment and Animals (EN)	-1.103 (.098) ***	-66.8
Health (HE)	-0.981 (.092) ***	-62.5
Higher Education (BH)	-1.226 (.120) ***	-70.7
Hospitals (EH)	-0.787 (.102) ***	-54.5
Human Services (HU)	-1.032 (.091) ***	-64.4
International, Foreign Affairs (IN)	-0.787 (.111) ***	-54.5
Mutual/Membership Benefit (MU)	-0.571 (.135) ***	-43.5
Public, Societal Benefit (PU)	-0.849 (.092) ***	-57.2
Religion Related (RE)	-0.587 (.093) ***	-44.4
Age	-0.002 (.000) ***	-0.2
Size TV (in $100000s)	-0.001 (.000) ***	-0.1
Gov't Grants and Contracts TV (in $100000s)	-0.011 (.002) ***	-1.1
Steadiness (Gov't Grants, Contracts)	-0.047 (.005) ***	-4.6
-2 Log likelihood	518348.131	
- 2 LL model chi-square	840.812 ***	
Number of events (exits)	22162 of 132396	

*** p < .001 ** p < .01 * p < .05 # p < .1
Note : Standard errors in parentheses.
The NTEE category for "Unknown" is excluded, so dummy variable for NTEE subsector is in comparison to the Unknown category.

The above results show that the coefficient of variation has a beta of -0.047, showing a decrease in the odds of exit of 4.6 percent for every 1 unit increase in the standard deviation. Based on this analysis, I also fail to reject the null hypothesis.

Hypothesis $H_0$2C: Nonprofits with unsteady revenue/expenditures are equally or less likely to fail than nonprofits with steady expenditures.

Although the relationship between grant and contracts steadiness and exit was not clear from the above analyses, it is unclear if the correlations between various funding sources mean that, when an organization loses or wins government support, it changes how it pursues other sources of funding or the costs it incurs. I therefore am interested in examining the effects of financial variables that represent the organization's complete financial situation.

Method 1

I first analyze the effect of overall revenue stability on survival, controlling for government funding. This also will allow for the interpretation of the effect of government funding after controlling for stability of revenues overall. I use the coefficient of variation rather than the standard deviation because it is more normally distributed. The results of Cox regressions including the coefficient of variation for total revenue are shown in Table 3P.

Table 3P: Cox Regression Estimate of Hazard of Organizational Closure with Time-Dependent Government Funding and Coefficient-of-Variation-Based Revenue Steadiness

Independent Variables	β (SE)	Hazard Ratio
Arts, Culture, and Humanities (AR)	-1.047 (.093) ***	-64.9
Education (ED)	-0.953 (.092) ***	-61.4
Environment and Animals (EN)	-1.112 (.098) ***	-67.1
Health (HE)	-0.991 (.092) ***	-62.9
Higher Education (BH)	-1.233 (.120) ***	-70.9
Hospitals (EH)	-0.780 (.102) ***	-54.2
Human Services (HU)	-1.042 (.091) ***	-64.7
International, Foreign Affairs (IN)	-0.797 (.111) ***	-54.9
Mutual/Membership Benefit (MU)	-0.569 (.135) ***	-43.4
Public, Societal Benefit (PU)	-0.855 (.092) ***	-57.5
Religion Related (RE)	-0.585 (.093) ***	-44.3
Age	-0.002 (.000) ***	-0.2
Size TV (in $100000s)	-0.001 (.000) ***	-0.1
Gov't Grants and Contracts TV (in $100000s)	-0.021 (.001) ***	-2.1
Steadiness Co. of Var. (Revenue)	-0.002 (.003)	-0.2
-2 Log likelihood	518477.984	
- 2 LL model chi-square	826.419 ***	
Number of events (exits)	22162 of 132396	

*** p < .001 ** p < .01 * p < .05 # p < .1
Note : Standard errors in parentheses.
The NTEE category for "Unknown" is excluded, so dummy variable for NTEE subsector is in comparison to the Unknown category.

Although the government grants and contracts variable remains negative and significant, the variable for steadiness of revenue is insignificant. Therefore, we fail to reject the null hypothesis that nonprofits with unsteady revenue are equally or less likely to exit.

Method 2

I next analyze the effect of overall expenditure stability on survival, continuing to control for government funding and size of the organization (which is also draws from the expenditure variable). I use the coefficient of variation rather than the standard deviation because it is more normally distributed. The results of Cox regressions including the coefficient of variation for Expenditures are shown in Table 3Q.

Table 3Q: Cox Regression Estimate of Hazard of Organizational Closure with Time-Dependent Government Funding and Coefficient-of-Variation-Based Expenditure Steadiness

Independent Variables	β (SE)	Hazard Ratio
Arts, Culture, and Humanities (AR)	-1.044 (.093) ***	-64.8
Education (ED)	-0.953 (.092) ***	-61.4
Environment and Animals (EN)	-1.119 (.098) ***	-67.3
Health (HE)	-0.993 (.092) ***	-62.9
Higher Education (BH)	-1.227 (.120) ***	-70.7
Hospitals (EH)	-0.797 (.102) ***	-54.9
Human Services (HU)	-1.031 (.091) ***	-64.4
International, Foreign Affairs (IN)	-0.844 (.112) ***	-57.0
Mutual/Membership Benefit (MU)	-0.601 (.135) ***	-45.2
Public, Societal Benefit (PU)	-0.866 (.092) ***	-57.9
Religion Related (RE)	-0.581 (.093) ***	-44.1
Age	-0.002 (.000) ***	-0.2
Size TV (in $100000s)	-0.001 (.000) ***	-0.1
Gov't Grants and Contracts TV (in $100000s)	-0.020 (.001) ***	-2.0
Steadiness Co. of Var. (Size)	.232 (.017) ***	26.1
-2 Log likelihood	518359.624	
- 2 LL model chi-square	825.770 ***	
Number of events (exits)	22162 of 132396	

*** p < .001 ** p < .01 * p < .05 # p < .1
Note : Standard errors in parentheses.
The NTEE category for "Unknown" is excluded, so dummy variable for NTEE subsector is in comparison to the Unknown category.

In this regression the government grants and contracts variable remains negative and significant, and the variable for steadiness of size (expenditures) is significant at the .001 level. The coefficient of 0.232 translates to a hazard ratio of 26.1, indicating an increase in the odds of exit of 39.3 percent for every additional 1 coefficient of variation (a variation equal to the average amount of expenditures). Here, unsteadiness is correlated with increased odds of exit, and this is the first steadiness-related result where we can reject the null hypothesis.

Hypothesis $H_0$2D: Among organizations with relatively steady funding across all sources, increases in government funding are not correlated with increased failure.

To truly understand steadiness and government funding, it is important to explore multiple methods of untangling these two concepts. If one supposes that a reason for the differences between government funding and other funding is the steadiness of each type of funding, than eliminating the differences in steadiness can help to uncover the presence or absence of other characteristics related to failure. I therefore test the null hypothesis that, for organizations with relatively steady funding across all revenue sources, government funding will not be related to exit.

To test this hypothesis I wanted to isolate all organizations with steady funding, even if it was no funding, for government grants, private funding (with special events and dues), and other revenue. I measured steadiness using the coefficient of variation, and tested several levels of steadiness: 0.1, 0.25, and 0.5. I created three dummy variables for the three levels of steadiness I wished to test: variance within 10% of mean, variance within 25% of mean, and variance within 50% of mean. I then analyzed the relationship between funding and exit using a Cox regression that included a time-dependent variable for government funding (the variable of interest) and allowed it to interact with the dummy variables. I also employed a second, alternative method where I included the interaction term as well as a separate time-dependent government variable. The results of these two analyses are presented in Table 3R (primary model) and Table 3S (alternative model).

Table 3R: Cox Regression Estimate of Hazard of Organizational Closure with Time-Dependent Government Funding Interacting with Three Minimum Levels of Coefficient-of-Variation-Based Funding Steadiness

Independent Variables	β (SE)	Hazard Ratio	β (SE)	Hazard Ratio	β (SE)	Hazard Ratio
Arts, Culture, Humanities (AR)	-1.054 (.093) ***	-65.1	-1.054 (.093) ***	-65.1	-1.053 (.093) ***	-65.1
Education (ED)	-.965 (.092) ***	-61.9	-.965 (.092) ***	-61.9	-.964 (.092) ***	-61.9
Environment and Animals (EN)	-1.122 (.098) ***	-67.4	-1.122 (.098) ***	-67.4	-1.121 (.098) ***	-67.4
Health (HE)	-1.033 (.092) ***	-64.4	-1.033 (.092) ***	-64.4	-1.028 (.092) ***	-64.2
Higher Education (BH)	-1.265 (.120) ***	-71.8	-1.258 (.120) ***	-71.6	-1.250 (.120) ***	-71.3
Hospitals (EH)	-.707 (.102) ***	-50.7	-.709 (.102) ***	-50.8	-.722 (.102) ***	-51.4
Human Services (HU)	-1.084 (.091) ***	-66.2	-1.084 (.091) ***	-66.2	-1.078 (.091) ***	-66
International, Foreign Aff. (IN)	-.814 (.111) ***	-55.7	-.814 (.111) ***	-55.7	-.812 (.111) ***	-55.6
Mutual/Membership Benefit (MU)	-.561 (.135) ***	-42.9	-.561 (.135) ***	-42.9	-.562 (.135) ***	-43
Public, Societal Benefit (PU)	-.874 (.092) ***	-58.3	-.874 (.092) ***	-58.3	-.872 (.092) ***	-58.2
Religion Related (RE)	-.581 (.093) ***	-44.1	-.581 (.093) ***	-44.1	-.581 (.093) ***	-44.1
Age	-.002 (.000) ***	-0.2	-.002 (.000) ***	-0.2	-.002 (.000) ***	-0.2
Size TV (in $100000s)	-.002 (.000) ***	-0.2	-.002 (.000) ***	-0.2	-.002 (.000) ***	-0.2
Gov't Grants and Contracts TV (in $100000s)*Co. of Var. <.1	.006 (.001) ***	0.6	---		---	
Gov't Grants and Contracts TV (in $100000s)*Co. of Var. <.25	---		.000 (.002)	0	---	
Gov't Grants and Contracts TV (in $100000s)*Co. of Var. <.5	---		---		-.007 (.001) ***	-0.7
- 2 Log likelihood	502887.072		502910.595		502912.577	
- 2 LL model chi-square	729.488 ***		707.906 ***		698.094 ***	
Number of events (exits)	21531 of 128779		21531 of 128779		21531 of 128779	

*** p < .001 ** p < .01 * p < .05 # p < .1 Note : Standard errors in parentheses.
The NTEE category for "Unknown" is excluded, so dummy variable for NTEE subsector is in comparison to the Unknown category.

Table 3S: Cox Regression Estimate of Hazard of Organizational Closure with Time-Dependent Government Funding and Three Minimum Levels of Coefficient-of-Variation-Based Steadiness Interacting with Time-Dependent Government Funding

Independent Variables	β (SE)	Haz. Rat.	β (SE)	Haz. Rat.	β (SE)	Haz. Rat.
Arts, Culture, Humanities (AR)	-1.047 (.093) ***	-64.9	-1.046 (.093) ***	-64.9	-1.048 (.093) ***	-64.9
Education (ED)	-.952 (.092) ***	-61.4	-.952 (.092) ***	-61.4	-.952 (.092) ***	-61.4
Environment and Animals (EN)	-1.111 (.098) ***	-67.1	-1.110 (.098) ***	-67	-1.111 (.098) ***	-67.1
Health (HE)	-.988 (.092) ***	-62.8	-.989 (.092) ***	-62.8	-.989 (.092) ***	-62.8
Higher Education (BH)	-1.235 (.120) ***	-70.9	-1.231 (.120) ***	-70.8	-1.247 (.120) ***	-71.3
Hospitals (EH)	-.780 (.102) ***	-54.2	-.778 (.102) ***	-54.1	-.776 (.102) ***	-54
Human Services (HU)	-1.039 (.091) ***	-64.6	-1.039 (.091) ***	-64.6	-1.040 (.091) ***	-64.6
International, Foreign Aff. (IN)	-.797 (.111) ***	-54.9	-.795 (.111) ***	-54.8	-.795 (.111) ***	-54.8
Mutual/Membership Benefit (MU)	-.570 (.135) ***	-43.4	-.570 (.135) ***	-43.5	-.571 (.135) ***	-43.5
Public, Societal Benefit (PU)	-.854 (.092) ***	-57.4	-.854 (.092) ***	-57.4	-.853 (.092) ***	-57.4
Religion Related (RE)	-.585 (.093) ***	-44.3	-.586 (.093) ***	-44.3	-.587 (.093) ***	-44.4
Age	-.002 (.000) ***	-0.2	-.002 (.000) ***	-0.2	-.002 (.000) ***	-0.2
Size TV (in $100000s)	-.001 (.000) ***	-0.1	-.001 (.000) ***	-0.1	-.001 (.000) ***	-0.1
Gov't Grants and Contracts TV (in $100000s)	-.023 (.001) ***	-2.3	-.026 (.002) ***	-2.6	-.032 (.002) ***	-3.1
Gov't Grants and Contracts TV (in $100000s)*Co. of Var. <.1	.029 (.002) ***	2.9			---	
Gov't Grants and Contracts TV (in $100000s)*Co. of Var. <.25	---		.025 (.002) ***	2.5	---	
Gov't Grants and Contracts TV (in $100000s)*Co. of Var. <.5	---		---		.023 (.002) ***	2.3
- 2 Log likelihood	518418.707		581398.475		518387.759	
- 2 LL model chi-square	838.663 ***		836.300 ***		833.458 ***	
Number of events (exits)	22162 of 132396		22162 of 132396		22162 of 132396	

*** p < .001 ** p < .01 * p < .05 # p < .1 Note : Standard errors in parentheses.

The NTEE category for "Unknown" is excluded, so dummy variable for NTEE subsector is in comparison to the Unknown category.

The interaction terms in Table 3R show the effect of additional government funding on organizations that have steady government funding. When interpreting the beta and resulting hazard ratio, it is important to note that, because of the interaction term, this interaction variable is combining the effects of having steady funding across all sources and the effect of an increase in government funding, compared to all other non-steady-revenue, non-government-funded organizations. The results show three different relationships between government funding and exit for each of the three steadiness levels examined. For organizations with less than a 0.1 coefficient of variation for each of the three main streams, each additional $100,000 in government funding is correlated with a 0.6 percent increased hazard of exit (significant at the .001 level); this is the first analysis that has resulted in a positive sign for this variable. When organizations with less than a 0.25 coefficient of variation for each of the 3 main streams are considered, the interaction term is insignificant. For organizations with a less than 0.5 coefficient of variation for each stream, each additional $100,000 in government funding is correlated with a 0.7 percent decreased hazard of exit (significant at the .001 level). Here, I reject the null hypothesis at the 0.1 level, but fail to reject the null hypothesis at the 0.25 and 0.5 levels.

In Table 3S, the separate term for government funding has the effect of controlling for the amount of government funding. The interaction term shows the additional effect of having specified level of steadiness on the effect of each additional $100,000 in government funding. These two terms essentially split apart the effect shown in Table 3R. Both the time-varying government funding term and the interaction term must be understood to interpret the effect of the funding on the hazard of exit. For those organizations with some type of unsteady funding, government funding leads to a decrease in the hazard of exit. However, for those organizations with steady funding across all sources, this effect is moderated. To understand the effect of additional dollars, one must combine the time-varying government funding term's beta with the interaction term's beta to understand the effect of funding for these organizations.

For organizations with steady funding, an additional $100,000 in government funding combines a positive effect from the interaction term as well as a negative effect from the separate government funding term. In a departure from the results shown in Hypothesis 1, the interaction term has a consistently positive beta. Even when combined with the time-dependent government funding variable, the most steadily-funded organizations (<0.1 coefficient of variation for each of the three funding streams) have a positive beta. Therefore, for this set of organizations, I fail to reject the null hypothesis once again.

<u>Hypothesis 3</u>

The third hypothesis focuses on the relationships between funding diversification and survival. Literature states that the organizations that have a portfolio that is less diversified in favor of higher percentages of government funds have greater structural embeddedness towards those funds and are less likely to be able to replace them with other sources of funding (Foster and Fine 2007; Hodge and Piccolo 2005; Stone, Hager, and Griffin 2001). Portfolio theory and limited empirical research suggest that nonprofits that are skilled at securing many sources of funding will be more likely to survive (Markovitz 1952; Kingma 1993; Hager 2001). Furthermore, because the presence of government funding may be understood as a proxy for diversified funding, examining diversification will help to uncover if the effects of government funding are really standing in for the effect of diversification. Therefore, I use variables representing other funding and variables from finance theory describing concentration to examine the relationship between government funding and funding diversity for nonprofits.

Hypothesis $H_0$3A: After controlling for diversification in the form of other funding streams, organizations with government funding are equally or less likely to fail than non-government-funded nonprofits.

First I will examine if the government funding variable loses significance if I include the donated and other funding variables. I examine the effects of using both amounts and percentages funding to represent the additional funding streams.

Method 1

In the first Cox regression analysis, I include private and other funding variables as time-varying. I analyze the amount of funding in units of $100,000, consistent with my treatment of the size and government funding variables. Because I am including all three revenue variables, I remove the size variable from the analysis to avoid a near-linear relationship (the three revenue streams are assumed to be relatively equal to the expenditures variable in a typical nonprofit with a balanced budget).[31] The results are shown in Table 3T.

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[31] I conducted a sensitivity analysis where I chose not to remove the size variable. In that analysis, the size variable was insignificant, and the results for the other variables remain the same.

Table 3T: Cox Regression Estimate of Hazard of Organizational Closure with Time-Dependent Government, Private, and Other Funding

Independent Variables	β (SE)	Hazard Ratio
Arts, Culture, and Humanities (AR)	-0.976 (.093) ***	-62.3
Education (ED)	-0.887 (.092) ***	-58.8
Environment and Animals (EN)	-1.023 (.098) ***	-64.0
Health (HE)	-0.923 (.092) ***	-60.3
Higher Education (BH)	-0.917 (.120) ***	-60.0
Hospitals (EH)	-0.837 (.102) ***	-56.7
Human Services (HU)	-0.986 (.091) ***	-62.7
International, Foreign Affairs (IN)	-0.652 (.111) ***	-47.9
Mutual/Membership Benefit (MU)	-0.538 (.135) ***	-41.6
Public, Societal Benefit (PU)	-0.765 (.092) ***	-53.5
Religion Related (RE)	-0.527 (.093) ***	-41.0
Age	-0.002 (.000) ***	-0.2
Gov't Grants and Contracts TV (in $100000s)	-0.028 (.001) ***	-2.7
Private Rev. W/ SpEv, Dues TV (in $100000s)	-0.040 (.001) ***	-3.9
Other Rev. W/out Gov't, Private Funds (in $100000s) TV	.000 (.000) ***	0.0
-2 Log likelihood	517170.323	
- 2 LL model chi-square	981.972 ***	
Number of events (exits)	22162 of 132396	

*** p < .001 ** p < .01 * p < .05 # p < .1

Note : Standard errors in parentheses.

The NTEE category for "Unknown" is excluded, so dummy variable for NTEE subsector is in comparison to the Unknown category.

As demonstrated in the Table 3T, above, the government funding variable remains significant at the .001 level even with the inclusion of the two new revenue sources. The coefficient increases slightly to -0.028 from -0.021 (see Table 3A), and the decrease is likely significant given that both have standard errors of 0.001.[32] Based on this analysis, I fail to reject the null hypothesis.

[32] When the donations variable is restricted to include only donations (not special event revenue or dues), government funding remains significant at the .001, with a beta of -0.019. The beta for private revenue in this analysis is -0.047, which is also significant at the .001 level.

Method 2

In the second Cox regression analysis, I examine the private and other funding variables using "quartiles," which are actually five groupings including a zero-funding group. The usually-filtered organizations eliminate all organizations with negative government funding from the analysis, and I also filter organizations with negative values for private or other funding. In this analysis, the omitted quartiles are the zero-funded organizations. I also eliminate the size variable for consistency with Method 1.[33] The results are shown in Table 3U.

[33] I conducted a sensitivity analysis where I chose not to remove the size variable. In that analysis, the size variable was insignificant, and the results for the other variables remain the same.

Table 3U: Cox Regression Estimate of Hazard of Organizational Closure with Government, Private, and Other Funding Quartiles

Independent Variables	β (SE)	Hazard Ratio
Arts, Culture, and Humanities (AR)	-0.620 (.095) ***	-46.2
Education (ED)	-0.681 (.094) ***	-49.4
Environment and Animals (EN)	-0.677 (.100) ***	-49.2
Health (HE)	-0.528 (.094) ***	-41.0
Higher Education (BH)	-0.467 (.122) ***	-37.3
Hospitals (EH)	-0.351 (.103) ***	-29.6
Human Services (HU)	-0.681 (.093) ***	-49.4
International, Foreign Affairs (IN)	-0.420 (.114) ***	-34.3
Mutual/Membership Benefit (MU)	-0.395 (.137) **	-32.6
Public, Societal Benefit (PU)	-0.577 (.094) ***	-43.9
Religion Related (RE)	-0.435 (.096) ***	-35.3
Age	-0.001 (.000) *	-0.1
Gov't Grants and Contracts Q1	-0.431 (.026) ***	-35.0
Gov't Grants and Contracts Q2	-0.385 (.026) ***	-31.9
Gov't Grants and Contracts Q3	-0.552 (.028) ***	-42.4
Gov't Grants and Contracts Q4	-0.680 (.033) ***	-49.3
Private Funding W/ SpEv, Dues Q1	-0.366 (.020) ***	-30.6
Private Funding W/ SpEv, Dues Q2	-0.683 (.022) ***	-49.5
Private Funding W/ SpEv, Dues Q3	-0.998 (.024) ***	-63.1
Private Funding W/ SpEv, Dues Q4	-1.345 (.027) ***	-74.0
Other Revenue (W/out Gov't, Private Funds) Q1	-1.192 (.056) ***	-69.6
Other Revenue (W/out Gov't, Private Funds) Q2	-1.463 (.056) ***	-76.9
Other Revenue (W/out Gov't, Private Funds) Q3	-1.772 (.057) ***	-83.0
Other Revenue (W/out Gov't, Private Funds) Q4	-2.113 (.058) ***	-87.9
-2 Log likelihood	488007.973	
- 2 LL model chi-square	8504.654 ***	
Number of events (exits)	21208 of 129111	

*** p < .001 ** p < .01 * p < .05 # p < .1
Note : Standard errors in parentheses.
The NTEE category for "Unknown" is excluded, so dummy variables for NTEE subsector are analyzed in comparison to the Unknown category.
The category for zero-funded organizations is excluded, so dummy variables for the quartiles of government funding are analyzed in comparison to zero-funded organizations.

The government funding quartiles remain significant at the .001 level even with the inclusion of the two new revenue sources. When compared to Table 3C, the coefficients here are decreased in absolute terms. Here, both the private funding and other revenue quartiles have coefficients which increase in absolute terms as the quartiles increase, a result which indicates that the functional form of the private funding variable is relatively more consistent with the standard log-linear form than the grants and contracts variable but leaves questions about the functional form and the 0.000 beta in the previous analysis for the other funding variable. The results here seem inconsistent with this earlier value, and I tested slight variations in the data set and methods of handling negative values to test the sensitivity of these results. The analysis lead to similar results, and therefore, I am not able to make a firm conclusion regarding the effect of other funding on nonprofit survival from these analyses. However, because the government funding beta remains negative, I fail to reject the null hypothesis here.

Method 3

The next analysis shows the inclusion of the private and other funding sources represented by percentage rather than amounts. This more accurately reflects the work done by Hager, Galaskiewicz, and Larson, which used percentages rather than amounts or dummy variables for other sources of funding. Because the three types of funding comprise a total of 100 percent (a linear relationship) I must avoid one of them, and I choose to represent government funding in absolute terms. I once again eliminate the size variable for easier comparison to the other methods.[34] Here, I use the same data set that I employed for Hypothesis 1, Method 4, where organizations with negative revenue are also filtered because they create negative percentages.[35]

[34] A sensitivity analysis where the size variable remains included reveals an increased beta of -0.016 for the government funding variable and a beta of -0.001 for the size variable (both significant at the .001 level). The private and other funding variables remain at 0.002 in this analysis.

[35] When I run a sensitivity analysis including the negative-revenue organizations, the value of the three main variables if interest decreases. Percent private has a beta of -.0002 and other revenue has a beta of 0.000008, and the government revenue variable has a beta of -0.023. All are significant at the .001 level.

Table 3V: Cox Regression Estimate of Hazard of Organizational Closure with Time-Dependent Government and Time-Dependent Private, Other Funding Percentages

Independent Variables	β (SE)	Hazard Ratio
Arts, Culture, and Humanities (AR)	-1.051 (.094) ***	-65.0
Education (ED)	-.954 (.093) ***	-61.5
Environment and Animals (EN)	-1.111 (.099) ***	-67.1
Health (HE)	-1.011 (.093) ***	-63.6
Higher Education (BH)	-1.363 (.120) ***	-74.4
Hospitals (EH)	-1.137 (.102) ***	-67.9
Human Services (HU)	-1.041 (.092) ***	-64.7
International, Foreign Affairs (IN)	-.817 (.113) ***	-55.8
Mutual/Membership Benefit (MU)	-.572 (.137) ***	-43.5
Public, Societal Benefit (PU)	-.847 (.093) ***	-57.1
Religion Related (RE)	-.586 (.095) ***	-44.3
Age	-.002 (.000) ***	-0.2
Gov't Grants and Contracts (in 100000s) TV	-.019 (.001) ***	-1.9
Pct. Private Rev. W/ SpEv Dues TV	.002 (.000) ***	0.2
Pct. Other Rev.	.002 (.000) ***	0.2
-2 Log likelihood	502592.812	
- 2 LL model chi-square	977.05 ***	
Number of events (exits)	21531 of 128779	

*** p < .001 ** p < .01 * p < .05 # p < .1
Note : Standard errors in parentheses.
The NTEE category for "Unknown" is excluded, so dummy variable for NTEE subsector is in comparison to the Unknown category.

Here, the inclusion of variables representing other sources of funding (controlling for other sources of funding) does not make the government funding variable insignificant. The beta for government funding is -0.019. This is a change from the results in Hypothesis 1, Model 4, where the variable had a beta of -0.005. This correlates with a 1.9 percent decrease in the hazard of exit for each additional $100,000 in government funding. Here, the private and other funding variables have coefficients of 0.002, indicating that higher percentages of these funding streams actually increase odds of exit. All of these revenue variables are significant at the .001 level.[36]

[36] When I include a government dummy variable instead of the time-varying representation of government funding, the beta for this analysis becomes -0.648, which is significant at the .001 level and shows a decrease in the hazard of exit by 47.7 percent for those organizations with government funding.

This is an interesting result, given that, in Hypothesis 1, the analysis of the government funding variable led to a beta of 0.000. It will be important to examine this result in quartile form, because portfolio theory would suggest that some (perhaps limited) proportion of funding from any revenue stream is ideal, but a threshold exist where too great a reliance on these sources leads to systemic or unsystemic risk which would be problematic for survival. This was effectively demonstrated in the follow-up analysis of the government funding percentage quartiles, and I look to the next analysis to lead to similar insights regarding this result.

Method 4

It is possible that the 0.002 coefficients in Model 3 are similar to the coefficients in Model 1. In the fourth Cox regression analysis, I examine the private and other funding percentage variables using "quartiles." Similar to Method 2, I actually create five groupings including a zero-funding group (the omitted category). The usually-filtered organizations eliminate all organizations with negative government funding from the analysis, and I also filter organizations with negative values for revenue[37] or for private or other funding. For consistency with other methods employed in this hypothesis, I eliminate the size variable. The results are shown in Table 3W.

[37] I conducted a sensitivity analysis where these negative-revenue organizations were not filtered. The results were similar to those reported using this more-filtered data set.

Table 3W: Cox Regression Estimate of Hazard of Organizational Closure with Government Funding Quartiles and Private, Other Funding Percentage Quartiles

Independent Variables	β (SE)	Hazard Ratio
Arts, Culture, and Humanities (AR)	-.733 (.095) ***	-51.9
Education (ED)	-.796 (.094) ***	-54.9
Environment and Animals (EN)	-.813 (.100) ***	-55.7
Health (HE)	-.829 (.094) ***	-56.3
Higher Education (BH)	-.975 (.122) ***	-62.3
Hospitals (EH)	-.943 (.103) ***	-61.1
Human Services (HU)	-.869 (.093) ***	-58.1
International, Foreign Affairs (IN)	-.678 (.115) ***	-49.3
Mutual/Membership Benefit (MU)	-.668 (.139) ***	-48.7
Public, Societal Benefit (PU)	-.716 (.094) ***	-51.1
Religion Related (RE)	-.559 (.096) ***	-42.8
Age	-.002 (.000) ***	-0.2
Gov't Grants and Contracts Q1	-.506 (.027) ***	-39.7
Gov't Grants and Contracts Q2	-.635 (.029) ***	-47.0
Gov't Grants and Contracts Q3	-1.016 (.036) ***	-63.8
Gov't Grants and Contracts Q4	-1.488 (.045) ***	-77.4
Pct. Private Funding W/ SpEv, Dues Q1	-.572 (.022) ***	-43.5
Pct. Private Funding W/ SpEv, Dues Q2	-.849 (.034) ***	-57.2
Pct. Private Funding W/ SpEv, Dues Q3	-1.016 (.038) ***	-63.8
Pct. Private Funding W/ SpEv, Dues Q4	-1.390 (.047) ***	-75.1
Pct. Other Rev. (W/out Gov't, Private Funds) Q1	-1.608 (.061) ***	-80.0
Pct. Other Rev. (W/out Gov't, Private Funds) Q2	-2.053 (.062) ***	-87.2
Pct. Other Rev. (W/out Gov't, Private Funds) Q3	-2.134 (.065) ***	-88.2
Pct. Other Rev. (W/out Gov't, Private Funds) Q4	-2.441 (.069) ***	-91.3
-2 Log likelihood	482563.188	
- 2 LL model chi-square	5704.014 ***	
Number of events (exits)	20873 of 125913	

*** p < .001 ** p < .01 * p < .05 # p < .1
Note : Standard errors in parentheses.
The NTEE category for "Unknown" is excluded, so dummy variables for NTEE subsector are analyzed in comparison to the Unknown category.
The category for zero-funded organizations is excluded, so dummy variables for the quartiles of government funding are analyzed in comparison to zero-funded organizations.

Examining the quartiles for each of the funding streams, one can see that each of the coefficients becomes more negative as the value or percentage of that funding steam increases. This is a surprising result, given the positive beta in the previous analysis. The results of this analysis neither explain the positive value in the previous method nor are they consistent. To investigate, I conducted a sensitivity analysis on this and the previous model, including slight variations in the data set and methods of handling negative values. The results remained consistent with the primary models. Therefore, I am not able to draw firm conclusions about the role of increasing percentages of private and other funding on nonprofit survival. However, because the government funding quartiles maintain negative coefficients, and I once again fail to reject the null hypothesis.

Hypothesis $H_0$3B: After controlling for the overall funding diversification, organizations with government funding are equally or less likely to fail than non-government funding nonprofits.

The next two analyses employ a more common measure of diversification, the Herfindahl-Hirschman Index (HHI). The logic behind including such a test in a paper mostly about government grants is that it is possible that presence of government grants is partly a proxy for diversification of funding sources. The following three methods all include the HHI variable in some form[38] to see whether the government grants variables lose significance when HHI is added to the controls. If it is a proxy, we would expect that the government funding variable would become insignificant.

Method 1

The Cox regression allows for inclusion of the HHI in a time-varying form, so I run this model first to take advantage of all of the data at my disposal. The results are shown in Table 3X.

[38] In this analysis, only nonprofits which file the 990, and not the 990EZ, are included, because the data collected by the 990EZ is not rich enough to calculate an HHI. In addition, nonprofits which erroneously reported earnings in HHI revenue subcomponents which surpassed their total revenue and, therefore, resulted in HHI values above 1, the logical threshold.

Table 3X: Cox Regression Estimate of Hazard of Organizational Closure with Time-Dependent Government Funding and Time-Varying Revenue HHI

Independent Variables	β (SE)	Hazard Ratio
Arts, Culture, and Humanities (AR)	-1.385 (.148)***	-75.0
Education (ED)	-1.319 (.147)***	-73.3
Environment and Animals (EN)	-1.451 (.156)***	-76.6
Health (HE)	-1.202 (.146)***	-69.9
Higher Education (BH)	-1.467 (.172)***	-76.9
Hospitals (EH)	-.950 (.154)***	-61.3
Human Services (HU)	-1.346 (.145)***	-74.0
International, Foreign Affairs (IN)	-1.240 (.174)***	-71.1
Mutual/Membership Benefit (MU)	-.557 (.184)**	-42.7
Public, Societal Benefit (PU)	-1.090 (.146)***	-66.4
Religion Related (RE)	-.950 (.149)***	-61.3
Age	-.001 (.001)#	-0.1
Size TV (in $100000s)	-.001 (.000)***	-0.1
Gov't Grants and Contracts TV (in $100000s)	-.012 (.001)***	-1.2
Diversification TV	.576 (.029)***	78.0
-2 Log likelihood	268231.341	
- 2 LL model chi-square	912.651 ***	
Number of events (exits)	11971 of 95432	

*** p < .001 ** p < .01 * p < .05 # p < .1

Note : Standard errors in parentheses.

The NTEE category for "Unknown" is excluded, so dummy variable for NTEE subsector is in comparison to the Unknown category.

Here, the inclusion of the diversification variable does not make the government funding variable insignificant (it remains negative and significant at the .001 level). The diversification variable itself is significant at the .001 level and has a 78% increase in the hazard of failure for organizations with HHI of 1 (a portfolio relying on one revenue stream) when compared to a HHI of near 0 (a highly-diversified portfolio).

Method 2

Next, I analyze the average HHI rather than the time-varying HHI. The overall HHI may be more revealing of the true diversity of nonprofit funding than the HHI representing only a particular year. The results are shown in Table 3Y.

Table 3Y: Cox Regression Estimate of Hazard of Organizational Closure with Time-Dependent Government Funding and Average Revenue HHI

Independent Variables	β (SE)	Hazard Ratio
Arts, Culture, and Humanities (AR)	-1.280 (.149)***	-72.2
Education (ED)	-1.290 (.147)***	-72.5
Environment and Animals (EN)	-1.389 (.156)***	-75.1
Health (HE)	-1.176 (.146)***	-69.2
Higher Education (BH)	-1.422 (.172)***	-75.9
Hospitals (EH)	-1.004 (.154)***	-63.4
Human Services (HU)	-1.304 (.145)***	-72.9
International, Foreign Affairs (IN)	-1.269 (.174)***	-71.9
Mutual/Membership Benefit (MU)	-.542 (.184)**	-41.9
Public, Societal Benefit (PU)	-1.079 (.146)***	-66.0
Religion Related (RE)	-.961 (.149)***	-61.8
Age	-.001 (.001)#	-0.1
Size TV (in $100000s)	-.001 (.000)***	-0.1
Gov't Grants and Contracts TV (in $100000s)	-.011 (.001)***	-1.1
Average Diversification	1.099 (.045)***	200.1
-2 Log likelihood	268036.228	
- 2 LL model chi-square	1079.750 ***	
Number of events (exits)	11791 of 95432	

*** p < .001 ** p < .01 * p < .05 # p < .1
Note : Standard errors in parentheses.
The NTEE category for "Unknown" is excluded, so dummy variable for NTEE subsector is in comparison to the Unknown category.

Here, the inclusion of the diversification variable does not make the government funding variable insignificant. Interestingly, the diversification variable itself is significant at the .001 level and has a beta of 1.099. A one-unit increase in the HHI is correlated with a 200% increase in the hazard of exit. After controlling for diversification, the government funding variable retains a negative variable similar to previous models (it is significant at the .001 level), and I fail to reject the null hypothesis.

Method 3

One means of examining the coefficient found in Method 1 and 2 is to examine the functional form of the HHI or diversification variable. Here, I use quartiles to analyze the functional form, omitting the smallest quartile. The results are shown in Table 3Z.

Table 3Z: Cox Regression Estimate of Hazard of Organizational Closure with Time-Dependent Government Funding and Average Revenue HHI Quartiles

Independent Variables	β (SE)	Hazard Ratio
Arts, Culture, and Humanities (AR)	-1.308 (.149)***	-73.0
Education (ED)	-1.313 (.147)***	-73.1
Environment and Animals (EN)	-1.415 (.156)***	-75.7
Health (HE)	-1.196 (.146)***	-69.8
Higher Education (BH)	-1.452 (.172)***	-76.6
Hospitals (EH)	-1.018 (.154)***	-63.9
Human Services (HU)	-1.323 (.145)***	-73.4
International, Foreign Affairs (IN)	-1.274 (.174)***	-72.0
Mutual/Membership Benefit (MU)	-.566 (.184)**	-43.2
Public, Societal Benefit (PU)	-1.103 (.146)***	-66.8
Religion Related (RE)	-.973 (.149)***	-62.2
Age	-.001 (.001)#	-0.1
Size TV (in $100000s)	-.001 (.000)***	-0.1
Gov't Grants and Contracts TV (in $100000s)	-.011 (.001)***	-1.1
Average Diversification Q2	.327 (.029)***	38.6
Average Diversification Q3	.435 (.029)***	54.5
Average Diversification Q4	.650 (.028)***	91.5
-2 Log likelihood	268080.053	
- 2 LL model chi-square	1026.972 ***	
Number of events (exits)	11791 of 95432	

*** p < .001 ** p < .01 * p < .05 # p < .1
Note : Standard errors in parentheses.
The NTEE category for "Unknown" is excluded, so dummy variable for NTEE subsector is in comparison to the Unknown category.
The omitted quartile includes the lowest 25 percent of HHI variables, and the remaining dummy variables are in comparison to the lowest HHI quartile.

Here, the inclusion of the diversification quartiles does not make the government funding variable insignificant, which is consistent with the two previous models. Also consistent with the previous model, the three included quartiles have increasing beta coefficients, showing that the HHI variable is relatively consistent with the expected functional form. After controlling for diversification, the government funding variable remains negative and significant, and I again fail to reject the null hypothesis.

Hypothesis 4

Finally, to combine these ideas, I analyze the variables I found significant in earlier tests. The goal of this analysis is to understand the effects of government funding, after controlling for steadiness and diversity.

Hypothesis $H_0$4: After controlling for government funding steadiness/expenditure steadiness and funding diversity, nonprofits receiving government funding are equally or less likely to exit as nonprofits not receiving government funding.

It is instructive to run this analysis with the government funding variable (although I found several representations of this variable to be significant, I will include the grants and contracts amount variable in time-varying, lagged form), the HHI quartiles (I will use all of the quartiles, even thought only some were shown to be insignificant), and the steadiness variables. Both the government funding and size coefficient of variation variables were significant, so I will run two models to use each variable, in turn.

Method 1

For the first Cox regression, I include the steadiness variable for government funding. As before, the diversification variable for HHI quartiles uses the smallest quartile as the omitted variable. The results are shown in Table 3AA.

Table 3AA: Cox Regression Estimate of Hazard of Organizational Closure with Time-Dependent Government Funding, Coefficient-of-Variation-Based Government Steadiness, and Average Revenue HHI Quartiles

Independent Variables	β (SE)	Hazard Ratio
Arts, Culture, and Humanities (AR)	-1.267 (.149)***	-71.8
Education (ED)	-1.347 (.147)***	-74.0
Environment and Animals (EN)	-1.356 (.156)***	-74.2
Health (HE)	-1.200 (.146)***	-69.9
Higher Education (BH)	-1.474 (.172)***	-77.1
Hospitals (EH)	-.994 (.154)***	-63.0
Human Services (HU)	-1.302 (.145)***	-72.8
International, Foreign Affairs (IN)	-1.298 (.174)***	-72.7
Mutual/Membership Benefit (MU)	-.648 (.184)***	-47.7
Public, Societal Benefit (PU)	-1.119 (.146)***	-67.3
Religion Related (RE)	-1.048 (.149)***	-64.9
Age	-.001 (.001)	-0.1
Size TV (in $100000s)	-.001 (.000)***	-0.1
Gov't Grants and Contracts TV (in $100000s)	-.011 (.001)***	-1.1
Steadiness Co. of Var. (Gov't Grants, Contracts)	-.403 (.019)***	-33.1
Average Diversification Q2	.306 (.029)***	35.8
Average Diversification Q3	.425 (.029)***	53.0
Average Diversification Q4	.604 (.028)***	82.9
-2 Log likelihood	267571.210	
- 2 LL model chi-square	1483.379 ***	
Number of events (exits)	11971 of 95432	

*** p < .001 ** p < .01 * p < .05 # p < .1

Note : Standard errors in parentheses.

The NTEE category for "Unknown" is excluded, so dummy variable for NTEE subsector is in comparison to the Unknown category.

The omitted quartile includes the lowest 25 percent of HHI variables, and the remaining dummy variables are in comparison to the lowest HHI quartile.

In this analysis, each of the variables was significant at some level except age. The coefficient of variation had a significant and negative effect on exit, indicating that a 1 unit change (an increase of a standard deviation equal to the mean of the variable) leads to a 33.1 decrease in the hazard of exit. Like earlier analyses, the diversification quartiles had increasing effects, with the first, or most diversified, quartile (omitted) having the lowest hazard of exit, and the fourth, or least diversified, quartile having the greatest hazard of exit. Especially revealing is that the government funding variable continues to have a beta of -0.011 and remains significant at the .001 level. Each additional $100,000 of government funding is correlated with a 1.1 percent decrease in the hazard of exit. This indicates that government funding is not so entangled with steadiness or diversity that the presence of these controls causes a significant change to the government funding coefficient.[39] Therefore, I fail to reject the null hypothesis.

Method 2

For the second Cox regression, I include the steadiness variable for expenditures, also known as size. As before, the diversification variable for HHI quartiles uses the smallest quartile as the omitted variable. The results are shown in Table 3AB.

[39] The coefficient of 0.020 is slightly lower in this model than the 0.021 in the original model (Model 1 of Hypothesis 1), but given that each has a standard error of .001, it is unlikely that this difference is significant.

Table 3AB: Cox Regression Estimate of Hazard of Organizational Closure with Time-Dependent Government Funding, Coefficient-of-Variation-Based Expenditure Steadiness, and Average Revenue HHI Quartiles

Independent Variables	β (SE)	Hazard Ratio
Arts, Culture, and Humanities (AR)	-1.314 (.149)***	-73.1
Education (ED)	-1.319 (.147)***	-73.2
Environment and Animals (EN)	-1.436 (.156)***	-76.2
Health (HE)	-1.209 (.146)***	-70.1
Higher Education (BH)	-1.450 (.172)***	-76.5
Hospitals (EH)	-1.047 (.154)***	-64.9
Human Services (HU)	-1.318 (.145)***	-73.2
International, Foreign Affairs (IN)	-1.300 (.174)***	-72.8
Mutual/Membership Benefit (MU)	-.630 (.184)***	-46.7
Public, Societal Benefit (PU)	-1.127 (.146)***	-67.6
Religion Related (RE)	-.978 (.149)***	-62.4
Age	-.001 (.001)#	-0.1
Size TV (in $100000s)	-.001 (.000)***	-0.1
Gov't Grants and Contracts TV (in $100000s)	-.011 (.001)***	-1.1
Steadiness Co. of Var. (Size)	.321 (.035)***	37.8
Average Diversification Q2	.312 (.029)***	36.6
Average Diversification Q3	.417 (.029)***	51.8
Average Diversification Q4	.647 (.028)***	90.9
-2 Log likelihood	268003.314	
- 2 LL model chi-square	1027.331 ***	
Number of events (exits)	11791 of 95432	

*** p < .001 ** p < .01 * p < .05 # p < .1
Note : Standard errors in parentheses.
The NTEE category for "Unknown" is excluded, so dummy variable for NTEE subsector is in comparison to the Unknown category.
The omitted quartile includes the lowest 25 percent of HHI variables, and the remaining dummy variables are in comparison to the lowest HHI quartile.

The pattern of results for Method 2 is similar to the results for Model 1. Each of the variables remains significant. The coefficient of variation for size's beta is positive, where the expenditures beta was negative, but this is consistent with earlier results. The beta for government funding remains negative, and its value is similar to the value without the inclusion of the steadiness and diversity variables. Once again, based on the results from Method 2, I fail to reject the null hypothesis that government-funded organization are equally of less likely to exit than other organizations, after controlling for funding steadiness and diversity.

Conclusion

The results outlined in this chapter included over 27 models describing the relationship between government funding, funding stability, fund diversification, and exit. The next chapter will discussed and interpret the results, their limitations, and their implications for future research and practice.

CHAPTER 4: DISCUSSION OF RESULTS AND CONCLUSIONS

The results outlined in the previous chapter included over two dozen models describing the relationship between government funding, funding stability, funding diversity, and exit or failure. The previous chapter discussed the results of each model. Here, I interpret the results as a whole, and I relate the results of my analyses to the prevailing literature. I also examine the practical use of results, the contribution of the results to theory, and the limitations of the research. Finally, I describe recommendations for future research.

Summary/Discussion of Results

The benefit of using multiple models to test each hypothesis is that results can be shown to be robust for multiple ways of representing each concept. However, one potential problem is deciphering the differences in the various models and ultimately accepting or rejecting each hypothesis. The following section summarizes the results of the models chosen to test each hypothesis, emphasizes the significance of certain results, and also draws on concepts from the literature to interpret the results.

Relationship Between Government Funding and Exit

The first set of analyses tested the null hypothesis that nonprofits receiving government funding are equally or less likely than other nonprofits to fail under stable funding conditions. Regardless of the definition of government funding, the method of measuring the funding (amount or percent; binary, quartile or continuous variables), the filtering of the data set, or the type of calculation used (lagged and non-lagged, Cox regression and binary logistic regression) the results of Hypothesis 1 consistently fail to reject the null hypothesis. The results instead indicate that government funding is correlated with a decreased probability of failing in a given time period.

Although the various tests consistently fail to reject the hypothesis and consistently result in negative coefficients for the government funding variables, the coefficients of the quartile analyses indicate that the government funding covariate may not have the standard loglinear functional form. Although quartiles are a crude way to approximate what might be a more complex functional form, the fact that the hazard ratio decreases between quartiles one and two before increasing again does indicate the need for further analysis. Previous researchers have found that misspecified functional forms in Cox regression analysis can affect the overall model by decreasing the size of covariate effects (for both the misspecified variable and other model variables) and the significance of the effects (Therneau and Grambsch 2000).

A third point of interest in the analysis of government funding and failure is the difference between lagged and non-lagged values representing government funds. However, the various models tested show inconsistent results. When examining the percentage of government funding variable, the strength of the coefficient for the lagged version of the variable (-0.005 with a standard error of 0.000) was much less than the non-lagged version of the variable (-0.022 with a standard error of 0.000). When examining the absolute amount of government funding using the dummy and quartile methods, the strength of the coefficients for the lagged version of the variables was actually greater than the non-lagged versions of the variables. Therefore, it is difficult to generalize conclusions about the effects of lagging variables. If further work shows that lagged variables have less of an effect on the hazard of exit than non-lagged variables, one could hypothesize that most of the impact of funding is felt in the year it is received.[40] If the impact of funding is largely felt in only the year it is received, then one would be forced to conclude that either any positive resource-dependence or legitimacy effects are short-lived rather than durable or that negative resource-dependence or legitimacy effects harm an organization quickly when the organizations loses its funding. Conversely, if future work shows that lagged variables have a greater effect on the hazard of exit than non-lagged variables, one could hypothesize that nonprofits require time to reap the benefits of government funding or to experience the challenges of funding loss.

The Steadiness of Funding and Its Relationship with Failure

The first question I examined related to steadiness was the question of relative steadiness among the funding streams. Previous research had indicated that the relative steadiness of government funds was a potential explanation for differences in survival for those organizations receiving government support. Here, I used the null hypothesis that government funding was equally stable as other funding types. To test the hypothesis, I first analyzed the mean population standard deviation of funding. I found that all definitions of government funding were steadier than the funding source labeled as "other" funding. The relative steadiness of government funding and private funding depended on the definition of government funding I employed. The grants-only definition of government funding had the lowest population mean standard deviation, and

[40] There is also the possibility of an endogeneity-related effect. An endogeneity bias could result if some unmeasured variable causes both survival and government funding and a lagged variable may eliminate some of this bias unless the effects of the third variable occur in different time periods. For more discussion of endogeneity, see the limitations section later in this chapter.

it was steadier than private funding. My primary, grants-plus-contracts definition of government funding and the definition of government funding including Medicare/Medicaid were both less steady than private funding. It is interesting to note that, because of the skewness of the variable distributions across the population, the other funding variable actually has the lowest median, but the highest mean. This is likely the cause of one non-significant and one less-significant result for comparisons with the other funding variable.

The results of the analysis are quite different when I take the amount of funding secured into account. Analyzing steadiness using the coefficient of variation essentially identifies the variation per dollar of funding. Using this analysis, the other funding variable is the most steady (has the lowest coefficient of variation mean) type of revenue. Private funding is the next steadiest, and government funding is the least steady type of funding. Among the various definitions of government funding tested, the government funding definition including grants, contracts, and Medicare/Medicaid has the lowest coefficient of variation; it is the steadiest of the three using this definition. The government grants definition is the least steady of all. The strength of these mean comparisons, compared to the standard deviation mean comparisons, is that the variables are more normally distributed, or at least much less skewed. Therefore, a parametric test was possible and all of the results are significant. When considering the results based on the first analysis using standard deviations, I can reject the null hypothesis of mean equality in most cases, but am left with a mixed overall impression of the relative stability of government, private and other/commercial funding. However, when considering the second, stronger analysis, the results are not mixed—government funding has the greatest variation per dollar of funding. I firmly reject the null hypothesis.

Figure 4A: Relative Steadiness of Funding Types, Two Definitions of Steadiness

Relative Steadiness		Standard Deviation	Co. of Variance
Most Steady	↑	Government Grants	Other Rev.
		Private Rev. w/ SpEv, Dues	Private Rev. w/ SpEv, Dues
		Gov't Grants, Contracts	Gov't Grants, Contracts, Medic.
		Gov't Grants, Contracts, Medic.	Gov't Grants, Contracts
Least Steady	↓	Other Rev.	Government Grants

The next two hypotheses analyzed the question of differences in failure between those with steady and unsteady funding for a particular stream. First, I tested two versions of steadiness for government grants and contracts, and then I tested steadiness variables for overall revenue and expenditures. Both government funding analyses lead to the surprising result that organizations with greater instability have a reduced hazard of exit. Being steadier, using both a standard deviation measure for steadiness and a variation per dollar measure, was actually harmful to nonprofit survival, according to the results I obtained. I believe this is due to a misspecified variable. The measure of instability I used doesn't account for underlying trends, which have been used in previous research by Kingma (1993) and others. Upward growth in funding, which would still appear as high within-organization variability, is hardly the problem that one thinks of when one things of instable funding. Upward-trending funding could be correlated with decreased hazard of failure, and explain these results. Analyzing variability in detrended data, and possibly also creating a variable that accounts for serial correlation, would help with potential misspecification. If future research finds that this effect persists after accounting for trends, one theoretically grounded reason for this result could be that organizations with greater instability experience less structural embeddedness – these organizations do not build their administrative systems based on a changing source of funding.

The one type of unsteadiness which was correlated with an increased hazard of exit was unsteadiness in expenditures. (The analysis of total revenue was insignificant.) The findings indicate that a nonprofit with increased variation per dollar expended has an increased probability of failure. Although the expenditure variable tested here is somewhat different than the decreasing program expenditure risk indicator tested by Greenlee and Trussel (2000), the link shown here between unsteady expenditures and exit does corroborate the assertion that that changes in expenditures (especially decreases) are an appropriate measure of ill health and a proxy for actual risk of failure.

In each of the four analyses associated with Hypothesis 2B, the included, time-dependent government funding variable remains negative and significant. Taking into account that two of these analyses also controlled for the steadiness of government funds, the persistent negative value for the government funding variable indicates that, after controlling for steadiness, government funding continues to decrease the odds of failure for nonprofit organization. This would call into question the assertion that the reason organizations with government funding are less likely to fail is due to the steadiness of this funding stream. However, because of the likely misspecification identified previously, this finding would need to be confirmed using a better-specified steadiness variable.

Finally, I examined only nonprofits with relatively stable funding for all revenue categories to determine if, under those conditions, the presence of government funding lead to decreased failure. The additional restrictions on other funding sources' stability are important because of the likely covariances between the various income streams (Kingma 1993; Rose-Ackerman 1981). In these analyses, I am able to reject the null hypothesis regarding government funding for the first time. In situations where no revenue stream fluctuates by more than 10% of its total (coefficient of variation < 0.1 for the three revenue categories), the interaction term yields a positive beta, indicating that government funding does not lead to an decreased hazard of failure.

Overall, the results of the analyses dealing with steadiness are far from conclusive, due to the likely misspecification of the steadiness variable. In general, these analyses confirm that government funding is correlated with a decreased hazard of failure even when controlling for government funding steadiness, and this decrease is mitigated only for those organizations that are the "steadiest" across all funding types. The results indicate that government funding must do something positive for an organization other than be a steady income stream. Theories related to government funding as a proxy for legitimacy or as an indicator for increased professionalism (and thereby being correlated with increased survival) would tend to be supported by these results.

Funding Diversity and Its Relationship with Government Funding and Exit/Failure

The final set of analyses examined the relationship between diversity of revenue sources and nonprofit exit or failure. While the role and benefits of diversity of funding sources is debated, it is generally believed to provide a benefit by reducing risk and increasing legitimacy. The optimal level of diversity is also debated. Using portfolio theory, and understanding the relative stability of funding sources, one would expect that organizations with too great of a concentration on government funding would experience negative consequences. Using portfolio theory, one would also expect that that some level of government funding, although it is the least stable of the funding sources I examined, would be included in an optimally-diversified portfolio. It would not be unreasonable to believe that the positive effects on survival that I found for government funding in Hypothesis 1 are merely a proxy for funding mix diversification. Here, I attempt to interpret the degree to which my results do or do not support these ideas.

The calculations from the Hypothesis 1 analysis for government funding percentage are a useful place to start this discussion. In Hypothesis 1, I analyzed the effects of increasing percentages of government funding using both a continuous variable and quartiles (to examine functional form). I found that, although the continuous variable had a beta of -0.005, indicating that increasing government funding percentages had a negative effect on the hazard rate, this calculation was commingling the effects of having government funding with the effects of increasing percentage of government funding. Using the quartiles analysis (and a subsequent analysis of the continuous variable using only government-funded organizations) I found that the reduced hazard of failure benefit was highest for organizations in the lowest quartile of government funding percentages. In other words, those organizations that were the most reliant on government experienced the smallest decrease in the hazard of failure. From these results, it is evident that there is a benefit to having government funding as part of a balanced portfolio, but the benefit decreases with the larger percentages of government funding. This is consistent with the prevailing wisdom regarding choosing a portfolio which balances funding sources to minimize risk (such as the risk of unstable government funding streams).

The first method of examining diversification I used in Hypothesis 3 was adding private and other funding variables to the analysis. From this, one can determine if the patterns revealed related to government revenue hold true for donated and other revenue. Like the government funding stream, a marginal increase in the amount of private and other revenue is correlated with a decreased hazard of exit. Unlike the government funding stream, the quartiles progress in a way that more closely reflect the log-linear functional form. In addition, the effects of private and other funding are inconclusive; certain models showed increased hazard of failure with increases in these funding streams, and other models showed decreased hazards of failure. Given that the analysis for government funding showed a large degree of variation based on percentage funding quartile, the relative ambiguity of the effects of non-diversified funding streams concentrated on private funding or other funding is notable.

I next tested the null hypothesis that, after controlling for funding type diversification, measured by HHI, government-funded nonprofits are equally or more likely to fail. If government funding is simply a proxy for diversification of funding, then the addition of a diversification variable would cause the government funding variable to lose significance. The three analyses I conducted using this data set consistently showed that organizations with less diversification (higher HHI scores) had increased hazards of failure when compared with organizations with more diversification (lower HHI scores). This would lend support to the idea that too little diversification carries increased risks, including, potentially, risks of structural embeddedness. Based on the these analyses, I have shown that the HHI model of diversification41, which uses all reported streams rather than three funding categories, has a significant impact on nonprofit survival. This would support and expand the findings by Hager (2001) which showed similar links between diversification and survival specifically for arts organizations. It also is in line with Chang and Tuckman's (1994) finding that diversification is usually correlated with greater financial strength, and would support the conclusion that this strength is correlated with survival.

Because the government funding variable retains its significance in each of the models tested, I have indicated that the effects of government funding are separate from the effects from diversity. This work demonstrates that, when diversity of an organization's portfolio is held constant, having government funds is not correlated with an increased hazard of failure, but instead would tend to indicate a decreased hazard of failure. Therefore, I reject the null hypothesis and demonstrate that government funding variable does not act merely as a proxy for diversification.

The Combined Model

The final hypothesis can be used to understand the relationship between government funding and exit when controlling for both steadiness of the government funding stream and overall diversification of the organization's funding mix (HHI value). In this case, the government funding variable maintains its significant negative beta, indicating that each additional $100,000 of government funding is correlated with a 2 percent decrease in the hazard of exit. This indicates that that the benefits of government

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[41] It should be noted that, when examining HHI, constant diversity does not imply identical funding mixes, just equivalent HHI values. The model does not allow for conclusions about particular streams, but does allow for general tests regarding diversity.

funding are not explained merely by the steadiness or diversification role of the funding stream.

This work finds that, in most cases, one cannot reject the null hypothesis that government funding decreases the risk of failure. Indeed, the results support the idea that government funding decreases likelihood of failure. The use of lagged variables, other calculation types, the analyses controlling for diversity of funding, and the analyses controlling for steadiness of the government funding itself do not affect this relationship (although steadiness of all sources can have an effect). Instead, the consistent effect of government funding strengthens the case for a causal relationship and eliminates possible alternative explanations for the correlation.

Furthermore, this work provides substantial evidence that, for a broader sample of organizations, the conclusions of the Hager, Galaskiewicz, and Larson (2004) study do not hold. There are several unique characteristics of the data set used by Hager, Galaskiewicz, and Larson (2004) which likely explain this difference. Hager et al. was conducted with a very small sample of organizations in one geographic location, which necessarily lead to a cohort of organizations with the same local government and state government. In addition, that research was based on a different, longer time period than the research here. Finally, that work used a dataset which included all organizations granted nonprofit status by the federal government, including many smaller nonprofits that are not included in the data set examined here.

Limitations

The calculations described here were done using a data set spanning 1998 to 2003. Concepts like steadiness are necessarily dependent on the time frame examined. Some practitioners and researchers contend that 1998 to 2003 is a time period where governments did not face difficult budget decisions and, therefore, the funding was more stable. The six years from 1998 to 2003 included a change in presidential administration and many changes in local and state governments. Such changes always entail financial decisions and changes, and therefore, the time period should not have limited the analysis in this way. The time examined here also included a period of economic recession (as defined by the National Bureau of Economic Research) encompassing March to November 2001. However, this recession was relatively mild, and the Bureau of Economic Analysis's revised estimates do not reveal the traditional "two consecutive quarters of falling GDP" benchmark, instead indicating a 0.1% growth in GDP during the first three quarters of 2001. Therefore, the analysis may be limited by the relative economic stability of this period, which is different from the economic conditions being experienced by many nonprofits in 2008, 2009, and 2010.

Other limitations stem from the nonprofit organizations in the data set. The results discussed here cannot be assumed to apply to small nonprofits or religious nonprofits. There were very few organizations with gross receipts of less than $25,000 included in the data set (and I excluded all those that were initially included from all but my most inclusive alternative data set), and nearly all of the previous research showed a significant positive relationship between revenue under $25,000 and failure. This result, like other previous research, may or may not hold with a larger sample of small nonprofits, but it certainly indicates that these organizations may have different characteristics than the other organizations in the data set.

In addition to limitations posed by the exclusion of nonprofits with under $25,000 in gross receipts, nonprofits with less than $100,000 in gross receipts complete a Form 990EZ, which includes only high-level information about sources of funds.[42] As mentioned in the methodology section, among those filing the Form 990EZ, there may be a small number of nonprofits who receive small grants (less than the $100,000 Form 990 filing threshold) that are coded as $0 due to way information is reported on the Form 990EZ. If this were true, there would be a small number of organizations with a measurement error in the government funding variable.

If measurement error is uncorrelated with the other covariates, one would commonly expect that the related coefficient would be biased toward zero.[43] Therefore one would observe that organizations receiving the least government funding have lower, and potentially insignificant, changes in hazard rate. However, as one can see in Hypothesis 1, Model 3, organizations in the smallest quartile of government-funded organizations are less likely to fail than organizations in the second quartile which receive more government funding. Furthermore, when all Form 990EZ filers are excluded from the data set (the most likely correction available without additional data from other databases or original surveys) in Model 1 footnotes, the coefficient of the government funding variable decreases. This demonstrates that the strength of the government funding effect is stronger for Form 990EZ filers than for the general

[42] Unfortunately, under the new IRS Form 990 guidelines, the filing threshold for the regular IRS Form 990 has been raised to $500,000. Therefore an increased number of nonprofits will be eligible to file the 990EZ, a less-informative form.

[43] It is possible that the measurement error may be correlated with other covariates in some way, therefore complicating the assumptions about the direction of bias.

population of Form 990 filers. Since the models here show a significant effect for the organizations with a small amount of government funding, and this may be biased toward zero, then correcting for the measurement error in some way would likely not make qualitative changes to the conclusions presented here.

The well-established issues with nonprofit reporting on the IRS Form 990 are also limitations in this research. Estimating government support from the Form 990 is still somewhat hindered by insufficiently detailed information. Nonprofits are asked to specifically report "fees and contracts from government agencies" and this would typically include payments from redeeming consumer-side vouchers; however, this revenue may be mistakenly included by nonprofits only as general program fee income. An important area where filing organizations have latitude is in the booking of multi-year grants, which may lead to a spike in one year of government revenue, although the funding is actually being spent over time. Although the accuracy of these forms has increased in recent years due to the persuasiveness of groups like the Urban Institute, there is still evidence that amateurism among nonprofits or vagueness in IRS instructions results in a failure to report accurately (Urban Institute 2006; NCCS 2006).[44]

Furthermore, because of limited definitive research on the complex interactions between factors within nonprofit organizations (and the limited data set available to me), this work suffers from possible endogeneity bias. Non-measured or non-included variables would influence the error term, and the resultant error term may be correlated with one of the independent variables in the model, wrongly assigning some of the effects

[44] Regardless of its improved instructions and additional information regarding governance, employees, and assets, the new IRS Form 990 may actually provide less precise revenue information than the previous form. The new form requires that government grants be reported separately, but it only requires the five largest sources of program service revenue be reported and does not seem to require an explicit breakout of Medicare/Medicaid or government contracts.

of the non-included variable to the included independent variable. Such endogenous variable could be anything from the metropolitan region the nonprofit inhabits to the education level of the executive director. Another complex interaction which I do not include an explicit correction for is covariances between funding types.[45] Kingma (1993) and other previous researchers have suggested that these are relevant when considering optimal funding mixes.

Finally, the organizations described as failing in this paper may or may not have truly failed. They may have slipped below the filing threshold, merged, or succeeded in achieving their objectives. Of these three reasons, mergers are most like failure, because few nonprofit leaders choose to go through the difficult process of merging unless they are in tenuous financial circumstance. Slipping below $25,000 in gross receipts is also dangerous for most nonprofits because a limited funding stream limits many organizations' abilities to achieve their missions. However, one cannot assume that all organizations that continue are actually successful in achieving their mission or furthering their stated charitable purpose—non-failure is certainly distinct from what most nonprofits would define as success.[46] The findings should be interpreted to show, not that continuing organizations are successful, but that exiting organizations failed to remain a self-determining, financially significant, operating organizations.

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[45] As shown in Chapter 2, I did test for correlations between the primary variables, and I did remove the Size variable when testing the Other Funding variable (these two had a high correlation).

[46] There is an underlying assumption in this work that failure or closure is an undesirable state for nonprofits. There is another viable perspective that nonprofit failure is healthy for the sector, as it allows resources to flow to stronger organizations with, presumably, better ability to achieve societal impact.

Implications and Recommendations

Practical Implications

The analyses reported here have practical implications for nonprofit managers as well as policymakers. Nonprofit boards and managers are conscious of the risks involved in all types of funding, including government funding. I have shown that the risk of closure, which most managers would consider a negative effect, found by Hager, Galaskiewicz, and Larson do not hold for a larger, more diverse sample. Therefore, managers and Board members should not be hesitant to accept this type of funding. However, once they have accepted government funds, they must realize that more funding does not necessarily equate to more protection. The best strategy appears to be accepting government funds, but keeping the amount limited and keeping the ratio of government funding to other types of funding low.[47] Policy-makers could incentivize funding diversification, and often do, by requiring matching funds or issuing grants as "challenges" to organizations.

Second, managers should be conscious that government funding can be unstable. On a dollar-for-dollar basis, government funding is actually the most unsteady of the funding streams I examined. Managers would be wise to avoid building core programs around government funding. Although I have shown here that simple instability, such as government funding instability, does not lead to a greater risk of failure, further research is needed in this area. At the very least, managers should be conscious of the funding trends their organization is experiencing and avoid instability within that trend.

[47] The knowledge that lower percentages of government funding are correlated with increased survival when compared to high levels of government funding may also provide an additional rationale to educate managers who are operating in Brooks' (2000b) hypothetical "short-term subsidy trap," the label he created for organizations which are earning sub-optimal total revenues by operating at high levels of government funding that may crowd-out private donations.

Although my work shows that funding instability may be uncorrelated with failure, it also shows that instability of expenditures are not. Managers should use caution when expanding programs. They should also be aware of the potential instability of the funding source for this expanding program. Policymakers should also be aware of the possible negative drawback to expenditure instability and, therefore, fund existing programs or incremental growth rather than large grants that may require an organization to grow dramatically. This would tend to call into question funding programs which are essentially government-funded, ground-up program creation.

Finally, organizational leaders should take note of the issues surrounding funding mix. As I showed in Hypothesis 3, non-diversified organizations had the highest hazard of failure, while diversified organizations had the lowest hazard of failure. Obtaining a variety of funding streams, within the limits of the skills of the organization to manage and maintain those funding streams, is a strategy which seems to decrease the odds of organizational exit. This finding supports previous comments about the danger of government-funded program creation and large government grants, because these types of funding strategies would tend to be correlated with less diversified funding patterns, and, therefore, would be at greater risk.

Recommendations for Further Research

As a result of the data set chosen in this research, government funding was treated as one source with three definitions. However, in reality, government funding can be further divided in funding from the federal government, state government, and other government sources. It may also be divided into competitive funding, market-side funding, and earmarked funding. There is reason to believe that each of these funding types might have different effects on nonprofit failure and stability of each stream may vary. In addition, organizations likely require different types of skills to obtain each of these types of funding. When federal funding is competitive and distributed through a complex RFP process, it requires a sophisticated finance and grantwriting function. Local and state funding is more often earmarked, and earmarked funding is usually determined by the strength of an organization's relationships with elected officials or the political power of its stakeholders. Finally, the financial benefit of market-side funding may be reliant on marketing skills or determined by the operational margins per client a nonprofit is able to achieve. Finally, different types of funding may confer different reputations and different legitimacy benefits or drawbacks. Researchers might begin to untangle these concepts by separating the sources of government funding.

Past researchers have shown that the philanthropic culture of a metropolitan area is significantly correlated with failure (Twombly 2003). This variable could be included for those nonprofits in cities where previous research has defined a philanthropic culture. The location of the nonprofit is defined by the Digitized Data database, although there are issues with nonprofits operating in cities other than where they may be headquartered or incorporated. Although most nonprofits are unlikely to change their location based on these findings, nonprofit leaders can be more aware of the strengths and weaknesses of their cities' philanthropic culture and adjust their strategies accordingly.

As reviewed in the summary of results from Hypothesis 1, several of the control variables as well as the variables representing amount and percentage of funding did not have a constant effect over all values of the variable. A more complex model might be developed in future research to more accurately represent the true shape of these variables in the Cox regression.

Another concept which might be represented with more complexity is that of funding diversification. Because of the limitations of the Digitized Data dataset, there is no way to determine if a funding category is made up of one large source/donor or many small sources/donors. One would need to add a second data set related to a charity's demonstration of meeting its public support test, which is not included with the Digitized Data at this time (although NCCS' Business Master File does contain information stating if an organization is required to meet the public support test).[48] With additional data from interviews or surveys, this information could be used to calculate a measure of funding diversification using techniques from the financial services field. Practitioners could use these findings to determine how to use their fund development time and energy.

The idea of instability is also worthy of further study. As outlined earlier, the results here indicated higher instability is linked to lower exit. This may be because the measure used was not sufficiently nuanced to capture the issues of instability. It is unclear if organizations are experiencing upward trends or random periods of high and low funding. Kingma states that only unexpected instability creates risk and that, for the total measure of stability, covariances must also be considered (1993). Information on expected instability, perhaps including a model of expected growth based on past

[48] Under the new filing requirements, most organizations will be required to disclose their most significant contributors in Schedule B. This will allow researchers to approximate the diversity of the contributions line item, although additional information will still be required to determine the diversity of other revenue streams.

changes, such as Kingma (1993) or Carroll and Stater (2008) do, and funding stream covariances would be useful additions to future work.

There is also an opportunity to use the data and techniques employed here to test the Tuckman and Chang (1991) indicators of financial vulnerability. The indicators could be tested to show the strength of correlation between vulnerability and exit, similar to the Greenlee and Trussel (2000) tests related to reduced program expenditures or assets the Carroll and Stater (2008) tests related to revenue volatility. The indicators could also be extended by incorporating the source of revenues (for instance, determining if vulnerability based on days of cash-on-hand or net margin is different for various types of funding).

Finally, if the NCCS were to expand the time period covered by the Digitized Data dataset and include information from the new 990N form, there would be increased assurance that nonprofits exiting the data set actually cease to exist.[49] In addition, if the NCCS were to expand the time period covered by the Digitized Data dataset, the analysis could be expanded to account for greater variations in economic and political conditions. In this case, the model could include control variables such as a scalar variable representing the economic environment (i.e. growth in GDP, stock market performance, etc.) and dummy variables representing political shifts, such as change in presidents or governors (although this would be affected by the geographic expectations discussed earlier). By including these factors, researchers could unpack some of the reasons why government funding can be unstable and potentially recommend changes to policy based on these findings.

[49] The new requirements dictate that nonprofits of all sizes (certain religious nonprofits and select governmental/political organizations continue to be exempt) return one of the series of forms each year, increasing the likelihood that nonprofits disappearing from the data set have failed.

Conclusion

A review of the literature shows that the reasons for nonprofit failures are not well-understood. Even in practice, many organizations cannot pinpoint the root causes of their failure. Previous research, conducted with a very small sample of organizations that were affected by the same local government and state government decisions, found that government funding led to a 155 percent greater hazard of failure. When examining a much larger and more geographically dispersed sample of nonprofits, this research has failed to confirm those findings. Instead, the findings show that government funding, regardless of the definition or how it is measured, decreases the hazard of failure.

In addition to the findings related to government funding, this research also lends valuable insight into steadiness. I find that government funding is more unstable when measured on a variation per dollar basis. Although I call for further specification of the steadiness variable in future research, I tentatively find that instability does not significantly increase the hazard rate. In the area of diversification, I find ample evidence that increasing diversification, measured by HHI, is beneficial to nonprofit survival.

With this knowledge, researchers must begin to untangle what is important about government funding that protects organizations from failure and uncover the reasons why some organizations still fail after having obtained government funding. Until that point, organizations need not avoid government funding because it may be correlated with failure. However, they do need to be aware of its instability and the issues surrounding a funding mix with a higher proportion of government funding, and plan accordingly.

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