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THREE ESSAYS ON FINANCIAL COLLABORATION IN THE GOVERNMENT AND NONPROFIT SECTORS

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THREE ESSAYS ON FINANCIAL COLLABORATION IN THE GOVERNMENT AND NONPROFIT SECTORS

DISSERTATION

A dissertation submitted in partial fulfillment of the requirements
for the degree of Doctor of Philosophy in the Graduate School at
the University of Kentucky

By

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Lexington, Kentucky

2018

ABSTRACT OF DISSERTATION

THREE ESSAYS ON FINANCIAL COLLABORATION IN
THE GOVERNMENT AND NONPROFIT SECTORS

The primary objective of this dissertation is to study the management of public and nonprofit resources and financial risk. Governments will be able to use its findings to continue to provide public services in collaboration with other sectors, including the nonprofit sector. Nonprofit financial self-sufficiency and sub-award grant mechanisms between the government and nonprofit sectors are two primary areas to be examined. This dissertation consists of three essays. The first investigates how the diversification of nonprofit revenue portfolios influences extreme revenue risks; the results show that the chance of extreme revenue loss increases when revenue sources are highly correlated to each other. The second essay examines the impact of strenuous state fiscal conditions on nonprofit organizations based in different U.S. states in order to report on generalizable empirical research on sub-award grant mechanisms, state and local government grants awarded to nonprofit organizations. The third essay explores the nonprofit sector's response to economic shocks, and whether specific state characteristics intensified or mitigated the impact of the economic crisis. The findings from this dissertation can help nonprofit-sector scholars and practitioners understand different perspectives of market risk, revenue risk and portfolio development, and financial stability related to government grants.

KEYWORDS: Nonprofit Finance, Nonprofit Risk Management, Inter-organizational Financial Security, Nonprofit Financial Security

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April 2, 2018
Date

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DEDICATION

My family members, Jang Tae Kim, Yeonhee Kim, and Youngbin Kim, have been my greatest source of inspiration and support throughout the course of my dissertation. Therefore, this dissertation is a testament to their encouragement and sacrifices.

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TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

Executive Summary

This dissertation consists of three essays related to nonprofit risk management, determinants of state grants, and economic crisis management. The findings from this dissertation can help nonprofit-sector researchers and managers understand different perspectives of (1) market risk, (2) revenue risk and portfolio development, and (3) financial stability related to government grants.

The first essay— *Nonprofit Revenue Strategy and Downside Risk: Applying Portfolio Theory and Extreme Value Theory*—investigates how the diversification of nonprofit revenues influences revenue risks. Traditionally, the coefficient of variation (CV) and Herfindahl-Hirschman Index (HHI) have been used to measure revenue volatility risk and diversification, respectively. Because such measures may not be appropriate for all nonprofit organizations, this paper considers alternative measures: the value-at-risk (VaR, a measure of downside risk) and the portfolio variance index as a measure of portfolio diversification.

The second essay— *The Influences of Budgetary Size on State and Federal Government Grant Contributions between 2000 and 2011*—discusses the impact of strenuous state fiscal condition on nonprofit organizations in the states. Government grants have been an important financial source for nonprofit organizations that can provide public services. However, there are few studies that have discussed the impact of the state governments' expenditures on their grant contributions on nonprofits. I thus estimate whether nonprofits receive more from state and local governments if state governments spend more on general public services.

The third essay— *Coping with Economic Crisis: The Buffering Capacity of U.S. States for the Nonprofit Sector*—explores the nonprofit sector's response to economic shocks and whether state characteristics intensified or mitigated the influence of the economic crisis. Economic crises have repeatedly occurred in the history of economies. Dealing successfully with unexpected external shocks is crucial to the survival of the nonprofit sector. Since few studies have examined the effects of an economic crisis on the nonprofit sector compared to studies on the for-profit and governmental sectors, this study can empirically contribute the market risk management and explain the unique characteristics of the nonprofit sector in terms of responding to an economic crisis.

Chapter One. Introduction to Nonprofit Finance and Revenues

In the United States, a "charitable nonprofit organization" refers to an entity that is eligible for tax-exempt status under section 501(c)(3) of the Internal Revenue Code. In 2016, more than a million charitable nonprofits were in operation among the total of 1.5 million tax-exempt organizations, including 105,030 private foundations and 368,337 chambers of commerce, fraternal organizations, and civic leagues. To receive tax-exempt benefits, this type of charitable organization must be organized and operated to exclusively pursue its charitable mission rather than pursuing the interests of any one private shareholder or individual. These organizations' activities vary among communities and include caring for veterans, rebuilding cities, educating children, supporting the workforce, nursing the sick, supporting the elderly, elevating the arts, mentoring the youth, and protecting natural resources, among other missions.

This type of charitable nonprofit has several restrictions. If the organization transfers excessive benefits to someone who has substantial influence over the organization, then the person or the organization may have to pay an excise tax and risk the loss of tax-exempt status. In addition, organizations may not be involved in political and lobbying activities in which they attempt to influence legislation or specific political candidates' campaigns.

The central justification for tax-exempt status and for the limiting of nonprofits' political activities is that these organizations provide public services to confer benefits to the community or to relieve burdens that the government would otherwise need to provide. In addition, tax exemption can be thought of as a kind of subsidy in which the government confers a benefit to nonprofits so that they may continue to produce positive

social value. The underlying assumption in this scenario is that, ideally, the social value of the public services the exempt organization provides will be equal to or greater than the amount of revenue loss caused by the tax exemption of these charitable organizations (Diamond, 2002). It may actually be more efficient to provide tax exemption to nonprofits than to provide services supported by public expenditure, which requires additional administration costs (Diamond, 2002). Since government support for nonprofits through tax exemptions is similar to an indirect subsidy, the financial sustainability of nonprofit organizations is an important consideration so that such organizations can continue to provide services on behalf of the government or to complement the government's provision of services.

Nonprofit Finance and Revenue Sources

The nonprofit sector is a significant part of the U.S. economy. According to the Urban Institute (2017), in 2013, nonprofits employed more than 14.4 million workers (10.6% of the workforce) and contributed $634 billion in wages and salaries, which represented 8.9% of all wages and salaries paid in the United States that year. Nonprofits also earn their revenues from a variety of sources. In 2013, for example, public charities reported over $1.74 trillion in total revenues and $1.63 trillion in total expenses. Of the revenue, 21% was from contributions, gifts, and government grants; 72% was from program service revenues, including government fees and contracts; and 7% was from other sources, including dues, rental income, special event income, and gains or losses from goods sold.

Nonprofit financial strategy and revenue management are important considerations, since nonprofits have different financial perspectives compared to for-

profit organizations. First, the main difference between for-profit and nonprofit firms is that the ownership of nonprofits belongs to donors, as opposed to the autonomous ownership of for-profit firms (Bowman, 2002). Because of this ownership situation, for-profit firms must maximize their profits, to be distributed to their anonymous individual investors. Nonprofit firms, in contrast, do not face pressure to create profits but instead have restrictions on asset utilization. For instance, the assets must be used to pursue the social benefits that the firm's donors have supported. In other words, the assets cannot be invested to maximize on their return, which restricts the nonprofit revenue finance strategy. It is therefore important to apply advanced corporate finance strategies with caution, since the nonprofit sector has come to compete more and more with the private sector, which has used advanced finance and risk management strategies for many years.

Second, the source of external revenue support (such as from the government) can affect the stability of nonprofit operations. Although government grants represent the second largest revenue sources for nonprofits, that revenue can depend on the financial stability of different levels of government. For instance, governments at all levels of the U.S. government paid $130 billion to U.S. nonprofits for services in 2014, but these government bodies did not pay the full costs of the services performed; more than half of nonprofits actually reported that the government had reimbursed them for less than 10 percent of their organizational costs (National Council of Nonprofits, 2017). The government was also late in providing much of this reimbursement. Of nonprofits that provided programs and services to different government bodies in 2014, around one-quarter found that the federal government had paid more than 30 days late. The problem was even more serious at the state and local levels, where late government payments

affected approximately 30–35 percent of nonprofit contractors (National Council of Nonprofits, 2017). Even though government support is generally known to be a stable and secure source of revenue for nonprofits, such underpayment or late payment can place nonprofits in financially difficult conditions (Beam and Conlan, 2002). For these reasons, studying changes in government grants awarded to nonprofits can provide useful information; in addition, since government grants are becoming a more significant part of nonprofits' revenues in terms of maintaining financial security and mission-oriented objectives, an exploration of the understudied topic of government grants awarded to nonprofits is in order.

Finally, the ability to successfully manage unexpected external shocks is crucial to the survival of the nonprofit sector. Economic crises have occurred repeatedly throughout the history of economics. Because few studies have examined the effects of an economic crisis on the nonprofit sector (compared to the number of studies that have been conducted on the public and private sectors), an examination of market risk management will help to explain the unique characteristics of the nonprofit sector in terms of its response to an economic crisis.

Dissertation Chapters

The first essay, "Nonprofit Revenue Strategy and Downside Risk: Applying Portfolio Theory and Extreme Value Theory," investigates how the diversification of nonprofit revenue portfolios influences extreme revenue risks. Traditionally, economists have used the coefficient of variation and the Herfindahl-Hirschman index to measure revenue volatility risk and diversification, respectively. As a result, having well-balanced portfolios with balanced assets is crucial for organizations to be able to adjust to

continuous volatility. The portfolio should have an appropriate number of revenue sources with a smaller correlation of revenue sources that will reduce portfolio volatility.

The second essay, "The Influences of Budgetary Size on State and Federal Government Grant Contributions between 2000 and 2011," discusses the impact of strenuous state fiscal conditions on nonprofit organizations in various states. Government grants are a significant financial supporter of nonprofit organizations that enable them to provide sufficient public services. Because few studies have discussed the impact of state government grant contribution expenditures on nonprofits, this essay will explore the determinants of state and local government grants awarded to nonprofit organizations in order to provide generalizable empirical research on sub-award grant mechanisms.

The third essay, "Coping with Economic Crisis: The Buffering Capacity of U.S. States for the Nonprofit Sector," explores the nonprofit sector's response to economic shocks and whether state characteristics intensified or mitigated the impact of the recent economic crisis. Economic crises have recurred throughout history, so the ability to successfully handle unexpected external shocks is crucial to the survival of the nonprofit sector. Few studies have examined the effects of economic crises on the nonprofit sector compared to the number of previous studies on the public and private sectors. This study can empirically contribute to the literature on market risk management and can explain the unique characteristics of the nonprofit sector in terms of its response to an economic crisis.

Chapter Two. Nonprofit Revenue Strategy and Downside Risk: Applying Portfolio Theory and Extreme Value Theory

Many nonprofits can be forced to shut down in very short time periods if they lose large donations or experience sudden changes in major revenue. Extreme value theory (EVT) models and measures the likelihood of such rare, extreme events of large magnitude. The theory is widely used to solve risk management problems in many fields, especially finance and stock investment (Alves & Neves, 2016; Choudhry & Wong, 2013). Such extreme value studies can be critical because managers can prepare for one-time extreme shocks that can significantly affect organizations, even jeopardizing their survival. For instance, the bottom 90% of charitable nonprofits that filed Form 990 earned roughly $21 million on average in 2012, whereas the top 10% earned $609 million in revenue (IRS, 2015). The majority of small nonprofits may not be able to survive extreme revenue loss unless they understand their potential risks and have proper risk management directions in place, such as through a portfolio revenue strategy. Classifying revenue risks and investigating whether nonprofit organizations can mitigate the downside risk through different revenue strategies are both worthwhile endeavors.

This study expands upon previous research by exploring how the nonprofit revenue strategy influences revenue risk. Revenue risk implies both downside risk and deviation risk. Most studies on revenue risk focus on mean deviation risk, which is measured by the standard deviation. The major problem with the use of standard deviation is that it focuses on estimating the risk of deviation from the average. Nonprofit managers may find it easier to address small increases or decreases from the average annual revenue, compared to significant declines in revenue. However, managers are

often concerned with large, unexpected losses (i.e., downside risk) since these extreme revenue losses can happen more frequently than what one expects and cause serious damage to the revenue of nonprofits. The chapter considers an alternative measure of risk: value-at-risk as a measure of downside risk. This approach is helpful in estimating the unexpected losses that nonprofits ultimately wish to minimize.

For revenue strategy, I also consider alternative measures—portfolio variance for the portfolio revenue strategy measure—to compensate for the limitations of the Herfindahl-Hirschman Index (HHI) method, which focuses solely on the number of revenue sources and the equal distribution of those sources. I conclude in this chapter that portfolio revenue strategy, rather than revenue diversification, can decrease both downside risk and deviation risk. Other factors, such as financial flexibility and the growth potential of nonprofits, have different influences on downside risk and deviation risk.

This study, therefore, investigates how the nonprofit revenue strategy influences financial risks. Traditionally, the coefficient of variation (CV) and Herfindahl-Hirschman Index (HHI) have been used to measure revenue volatility risk and diversification, respectively. Because such measures may not be appropriate for all nonprofit organizations, this chapter considers alternative measures: value-at-risk (a measure of downside risk) and the portfolio variance index as a measure of portfolio revenue strategy. The models employ a fixed-effects regression with Driscoll-Kraay (D-K) standard errors and test multiple observations of service fields based on the National Taxonomy of Exempt Entities (NTEE) over a period of five years, from 2008 to 2012. The results indicate that portfolio revenue strategy can reduce the downside risk and

stabilize revenue inflow. Financial flexibility and growth potential all have different impacts on downside and deviation risk. This study adds to the current literature by contributing a different perspective of revenue risk and diversification to nonprofit researchers and managers.

The chapter proceeds as follows. Section 1 offers a brief introduction to EVT, summarizes the concept of the coefficient of variation (CV) in juxtaposition to the concept of value-at-risk, and provides the conceptual framework of Markowitz's portfolio variance model. Section 2 introduces the hypotheses along with previous studies. Section 3 discusses the data and econometrics models that are applied in this study. Finally, sections 4, 5, and 6 present the statistical results and their implications for the nonprofit finance and risk management fields.

Theoretical Background

Extreme value theory (EVT)

EVT examines periods of extreme events that represent the discontinuity of normal periods. During some periods, for example, much larger changes will occur than those predicted by the normal distribution, where the market exhibits relatively modest changes in prices and returns. This theory has been developed and applied in various fields, including insurance, financial markets, natural disasters, weather, and pollution studies, where the analysis of extreme outliers is particularly important (Alves & Neves, 2016; Choudhry & Wong, 2013; Porter, 2007; Reiss, 2007). For example, the theory has been used to model extremely high temperatures or to evaluate the impact of earthquakes in different regions (Brown & Katz, 1995; Suzuki & Ozaka, 1994).

In the financial world, EVT has become more critical following the financial collapse of 2007–2008 as well as the 1987 stock market crash, often called Black Monday (Alves & Neves, 2016). Both financial crises significant impacted enough the market that they are difficult to categorize as normal market behavior. Specifically, the stock market return dropped around 23% in a single day on October 19, 1987, and by 9.5% on October 15, 2008.

Empirically speaking, EVT is associated with "fat-tailed" behavior, which implies the extreme risks inherent in finance. In other words, these extreme events might happen only rarely, but their impact can be larger than under normal, stable conditions, where clustering around the center of the normal probability distribution is more common (Kemp, 2011). For the most part, conservative investors prefer to avoid (or to prepare for) such unexpected outlier events, especially negative values in the left tail.

Revenue risk: Deviation risk and downside risk

Limitations of the coefficient of variation (CV). While CV is a useful tool for measuring financial volatility, it does have limitations. First, the measure presents deviation risk, which includes both upside and downside risk, and not specifically the latter. In financial risk management, the term "risk" refers to "a loss or an injury created by an activity" (Tarantino & Cernauskas, 2010, p. 2) and typically assumes the negative consequences of risk. CV essentially shows how the large majority of the actual revenue deviates above and below the mean (upside and downside risk). From a practical point of view, nonprofit managers are usually more concerned with excessive losses that occur with less frequency but have dire consequences for their organization.

Second, the use of CV as a volatility measure might be inaccurate in the case of skewed or leptokurtic (thick-tailed) non-normal distributions. The central limit theorem holds that the shape of the tail in a normal distribution is symmetric on both sides of the mean, which implies that the data are equally distributed around the middle. Unfortunately, the distribution of many nonprofits' revenue is leptokurtic, with tails thicker than a normal probability distribution. This situation means that large fluctuations occur more frequently and with higher and lower values compared to normal distributions. Asymmetry also implies that CV can understate or overstate the downside risk since CV averages deviation risk in both directions. CV thus may be a misleading measure of revenue risk for nonprofits that wish to minimize their downside risk.

Value-at-risk: Downside risk estimation. To measure the downside risk and overcome the limitation of the normal distribution, this chapter applies the concept of value-at-risk. The value-at-risk framework is widely used to measure and quantify losses that occur in the lower tail of a probability distribution, i.e., downside risk (Butler & Schachter, 1996). More specifically, value-at-risk answers the question of how much one expects to lose with a given probability—typically 1% or less. Value-at-risk provides the threshold value of the potential loss that is expected to be greater than the value-at-risk amount for a given probability. For example, if 1% of the value-at-risk on an asset equals a revenue decrease of 40%, then revenue declines of 40% or more are expected to happen in only 1% of all cases.

In mathematical terms, value-at-risk is based on the percentile point function ($ppf(p)$) (or the quantile function), which is the inverse of the cumulative distribution function (CDF) ($F(X)$). Specifically, CDF provides the probability of obtaining the

random variable X less than or equal to the given value *x* (or the proportion of the population with a value less than x). The *ppf* provides the threshold value of random variable x at a given probability, such as inverting x and y for the CDF (Haslwanter, 2016; Shaw, 2007; Stover, 2017). Value-at-risk is defined as follows:

$$VaR(X) = \inf\{x: P(X \leq x) \geq \alpha\} \quad (1)$$

where X is the random variable describing the value of the loss of a portfolio, and α*100% ($0 < \alpha < 1$) is a specific percentage that selects a sample of the worst cases for the portfolio to be analyzed (Acerbi & Tasche, 2002; Cade & Noon, 2003; Davino, Furno, & Vistocco 2014; Hosking & Wallis, 1987; Jorion, 2001; Teasdale, Kerlin, Young, & Soh, 2013). The quantile α is usually a small probability, such as .05, .01, or .001 (respectively, 5%, 1%, and 0.1%). This study, like many previous studies, will use the probability of 1%, which means that the events happen in the lowest 1% of the distribution (the first percentile).

The qualitative benefits of EVT in the corporate sector are many, and yet, EVT theory and value-at-risk have not yet been actively applied to nonprofit finance. Despite the potential benefits of EVT to the nonprofit sector, the calculation of value-at-risk often requires ample data to generate the probability distribution of the downside tail. Corporate financial data are frequently collected in daily or weekly intervals, making it possible to find a value-at-risk specific to each firm. However, nonprofit finance data are reported on annual bases, which makes it difficult for researchers or risk managers to generate the probability distribution and calculate the value-at-risk. Alternatively, a

portfolio approach may be taken using pooled data from firms that share common attributes or characteristics (such as the healthcare sector). The value-at-risk of the subsector can be calculated based on the distribution of losses among organizations for given years. This approach has been often used in corporate finance literature to compare the individual firm to the industry, so that the individual firms can compare themselves to their peer organizations or competitors. I employ this subsector approach to the nonprofit subsectors.

Table 1 illustrates the difference between the concepts of value-at-risk and CV in the context of the nonprofit subsectors. In the subsector of Arts, Culture, and Humanities, the value-at-risk is -0.81 for the average of years 2008–2012. This means that the average five-year revenue decline for the Arts subsector was equal to or less than -0.81 for 1% of the organizations in that subsector. Another way to say this is that revenue growth exceeded -0.81 for 99% of the organizations in the Arts subsector. The Environmental subsector provides an apt comparison. The value-at-risk for the Environmental subsector is larger than that for the Arts subsector, indicating that the Environmental sector has more downside risk. Specifically, 1% of the organizations in the Environmental subsector experienced revenue decline greater than or equal to 90%. What makes this comparison interesting is that by the CV measure, the Arts subsector has more dispersion of risk than the Environmental subsector. How is it that CV and value-at-risk produce seemingly contradictory results? The average and standard deviation are influenced by outliers, and the value-at-risk depends on the thickness of the tail. The Animal-related subsector is an example of relatively low financial risk, as indicated by both measures.

Table 1 Summary Statistics of Total Revenue by Sector (Total Revenue; $, %Δ; Average 2008-2012)

		Value		Volatility	
NTEE Code	Description	Total revenue ($)	Total revenue (%Δ)	Value-at-risk (1%; %Δ)	Coefficient of variation ($)
A	Arts, Culture, & Humanities	25,300,000	468.74	-0.81	5.91
B	Education	85,300,000	7.36	-0.71	3.65
C	Environment	22,600,000	2.71	-0.90	3.50
D	Animal-Related	21,300,000	0.22	-0.67	1.75
E	Health Care	197,000,000	12.42	-0.69	3.71
F	Mental Health & Crisis Intervention	24,700,000	0.36	-0.59	2.24
G	Disease, Disorders, & Medical Disciplines	48,300,000	0.47	-0.65	2.77
H	Medical Research	77,300,000	0.54	-0.80	3.00
I	Crime & Legal-Related	16,800,000	0.29	-0.72	2.67
J	Employment	27,000,000	0.12	-0.61	2.75
K	Food, Agriculture, & Nutrition	24,500,000	0.11	-0.65	3.95
L	Housing & Shelter	6,370,311	1,163.37	-0.86	3.76
M	Public Safety, Disaster Preparedness, & Relief	7,686,838	0.26	-0.83	2.32
N	Recreation & Sports	15,400,000	0.30	-0.59	6.73
O	Youth Development	10,100,000	0.27	-0.72	2.91
P	Human Services	26,000,000	5.52	-0.63	3.65
Q	International, Foreign Affairs, & National Security	96,100,000	4.64	-0.90	2.09
R	Civil Rights, Social Action, & Advocacy	30,200,000	2,579.77	-0.72	2.10
S	Community Improvement & Capacity Building	15,200,000	7.91	-0.82	3.96
T	Philanthropy, Voluntarism, & Grant-Making Foundations	34,200,000	30.96	-0.92	3.47
U	Science & Technology	137,000,000	1.10	-0.81	3.64
V	Social Science	39,500,000	0.21	-0.54	1.79

Table 1 (continued) Summary Statistics of Total Revenue by Sector (Total Revenue; $, %Δ; Average 2008-2012)

W	Public & Societal Benefit	41,500,000	3,758.98	-0.85	3.08
X	Religion-Related	15,400,000	0.43	-0.86	2.65
Y	Mutual & Membership Benefit	71,700,000	3.46	-0.83	6.31
Average		44,658,286	322.02	-0.75	3.37

Nonprofit Revenue Strategy: Revenue equalization and portfolio diversification

The Herfindahl-Hirschman Index (HHI). The HHI was originally developed to quantify the competition of different industrial sectors (Herfindahl, 1951). Many scholars from the nonprofit sectors use HHI calculations to measure how concentrated or evenly distributed a nonprofit's revenue sources are (Carroll & Stater 2009; Frumkin & Keating, 2011), which I will refer to this revenue diversification measured by HHI as "revenue equalization." Previous studies have used normalized HHI to measure diversification as follows:

$$HHI_{Normalized} = \frac{(1-\sum_{i=1}^{n} R_i^2)}{1-1/n} \quad , \qquad (2)$$

where R_i is the proportion of donations, earned revenue, and investment income, and n is the number of revenue sources. This formulation ranges from 0 to 1, with a value closer to 1 representing a more equal distribution among revenues, whereas 0 implies a perfect concentration. When a nonprofit has a higher number of revenue sources and equal distribution across those sources, its normalized HHI value will range from zero to one.

Even though the HHI is a widely used measurement tool in the nonprofit finance sector, it may be misleading in terms of measuring revenue diversification. For instance,

some nonprofits are more highly dependent on revenue sources such as donative income than on commercial or investment income because of their organizational characteristics or charitable missions. But this revenue concentration automatically leads to a low HHI index, which implies that the nonprofit carries a low diversification level and high financial risk even what might not be true. In addition, the HHI method disregards the cross-correlation among revenues when measuring portfolio diversification, unlike the case with scholars who use modern portfolio theory.

Portfolio strategy and risk model. The portfolio, in general, refers to a diversified collection of investments that can reduce the risk of investment return—in common parlance, not putting all your eggs in one basket (Tarantino & Cernauskas, 2010). Portfolio theory has contributed to the development and measurement of portfolio diversification and risk management (Fabozzi, 2012). Prior to the development of portfolio theory, diversification and risks were generally considered independent of each other, thus leading scholars to underestimate the covariance between assets (Fabozzi, 2012). Markowitz (1952), however, formulated the portfolio variance model (popularly referred to as the theory of portfolio selection), which became the foundation of modern portfolio theory (Fabozzi, 2012). Well-diversified portfolios are efficient and can maintain high expected returns while lowering risk through an analysis of the covariance between asset returns (Fabozzi, 2012; Jegers, 1997).

For multiple-asset portfolios, the variance of the portfolio return is the sum of the squared-weighted variances of the individual revenues plus twice the sum of the weighted pairwise covariance of the assets. For example, the equation measuring portfolio

diversification with the revenue of three assets—R_i, R_j, and R_k—is calculated as follows (Fabozzi, 2012, p. 10):

$$Portfolio\ variance\ (R_p) = w_i^2 var(R_i) + w_j^2 var(R_j) + w_k^2 var(R_k) + 2w_i w_j cov(R_i, R_j) + 2w_i w_k cov(R_i, R_k) + 2w_j w_k cov(R_j, R_k) \quad (3)$$

where R_p is the revenue portfolio; $var(R_i)$, $var(R_j)$, and $var(R_k)$ are the variances of revenue *i*, *j*, and *k*; cov(R_i, R_j), cov(R_i, R_k), and cov(R_j, R_k) are the covariances between the revenues *i*, *j*, and *k*; R_i, R_j, and R_k are the returns of assets *i*, *j*, and *k*; and w_i, w_j, and w_k are the weights of revenues *i*, *j*, and *k*. A higher portfolio variance value implies a less diversified (more volatile) portfolio.

The key determinant of portfolio variance is the covariance of revenues. The Markowitz portfolio variance model emphasizes the importance of cross-correlation among revenue sources. For instance, the variance of a portfolio can increase if the revenue covariances are large and positive, which implies that the revenues move in the same direction: as asset A increases (decreases), asset B also increases (decreases). Ideally, negative correlations are best, but rare, since the negative value can reduce the portfolio variance. Perhaps nonprofits might be able to at least acquire nearly independent sources, where the correlation is close to zero.

Table 2 helps to illustrate the difference between the HHI and portfolio variance in the context of nonprofit subsectors. For instance, the Philanthropy, Voluntarism, and Grant-Making Foundations subsector has relatively high values on both HHI, 0.64, and portfolio standard deviation, 0.69. These values tell us that this sector, on average, earns

from diverse revenue sources yet has high risk in regard to portfolios. In contrast, the Arts, Culture, and Humanities subsector has relative low values on both HHI, 0.12, and portfolio standard deviation, 0.16, meaning that this sector earns income from few sources but still has stable portfolios. This comparison tells us that diversifying revenue by adding more sources may not be equivalent to portfolio stability.

Table 2 Summary Statistics of Revenue Diversification by Sector (Average 2008–2011)

Nonprofit Subfields		Diversification	
NTEE Code	Description	HHI (1 diversified; 0 concentrated)	Standard deviation of portfolio*
A	Arts, Culture, & Humanities	0.12	0.16
B	Education	0.24	0.55
C	Environment	0.31	0.45
D	Animal-Related	0.16	0.12
E	Health Care	0.83	0.27
F	Mental Health & Crisis Intervention	0.29	0.12
G	Disease, Disorders, & Medical Disciplines	0.20	0.11
H	Medical Research	0.28	0.42
I	Crime & Legal-Related	0.23	0.51
J	Employment	0.40	0.20
K	Food, Agriculture, & Nutrition	0.33	0.12
L	Housing & Shelter	0.18	0.21
M	Public Safety, Disaster Preparedness, & Relief	0.15	0.38
N	Recreation & Sports	0.43	0.19
O	Youth Development	0.11	2.06
P	Human Services	0.29	6.80
Q	International, Foreign Affairs, & National Security	0.64	0.24
R	Civil Rights, Social Action, & Advocacy	0.53	0.22
S	Community Improvement & Capacity Building	0.24	0.28
T	Philanthropy, Voluntarism, & Grant-Making Foundations	0.62	0.69
U	Science & Technology	0.17	0.11
V	Social Science	0.39	0.16
W	Public & Societal Benefit	0.22	1.68

Table 2 (continued) Summary Statistics of Revenue Diversification by Sector (Average 2008–2011)

X	Religion-Related	0.21	0.90
Y	Mutual & Membership Benefit	0.77	4.15
Average		0.33	0.84

* Standard deviation of portfolio is the square root of portfolio variance.

Hypotheses and Variable Specification

The discussions in the previous section were about revenue volatility measurement (the limitations of CV and the potential benefits of value-at-risk) as well as diversification measurement (the limitations of HHI and the potential benefits of portfolio variance). I now will discuss several possible impacts of financial diversification on revenue risk, in the nonprofit finance sector. I examine the following hypotheses that build on previous studies (Table 3):

H1: Greater revenue diversification will decrease revenue risk.

H1(a) *Revenue equalization as measured by HHI will decrease downside risk.*

H1(b) *Portfolio diversification will decrease both deviation and downside risk.*

H2: Greater financial flexibility will decrease both deviation and downside risk.

H3: Greater growth potential will decrease both deviation and downside risk.

For a dependent variable, downside risk is calculated by value-at-risk at the 1% level ($\alpha = .01$) of the percentage change of total revenue (part VIII, line 12, on IRS form 990, p. 8, 2008). The interpretation is the expected threshold percentage change of total revenue that occurs in the lowest 1% of the organizations in the subsector. In addition, the deviation risk is measured by CV, which is the standard deviation divided by the average percentage change of total revenue (Carrol & Stater, 2009; Chang & Tuckman, 1994; Chikoto & Neely, 2014; Mayer, Wang, Egginton, & Flint, 2014). A higher CV

value represents a larger standard deviation relative to the expected mean, which implies a greater level of revenue deviation risk. Note that I used the percentage change in total revenue to calculate both CV and value-at-risk (Yan, Denison, & Butler, 2009; Chikoto & Neely, 2014). This can normalize the impact of different sized revenues and include the zero value, unlike the logarithmic form.

The empirical models include different explanatory variables depending on the hypothesis. For nonprofit revenues, several scholars have confirmed that greater revenue equalization can reduce revenue deviation risk (Carroll & Stater, 2009; Chikoto & Neely, 2014; Froelich, 1999; Frumkin & Keating, 2011; Mayer et al., 2014; Yan et al., 2009). It is well known in portfolio theory that revenue diversification can lower volatility. This is because greater diversification decreases the chances that all revenue sources will be exhausted at the same time. For example, if a nonprofit depends on only one source of revenue, then it may have high revenue risk since no back-up source exists. To measure revenue diversification, I will use the above mentioned HHI and portfolio variance. Therefore, under the broad first hypothesis that greater revenue diversification will decrease revenue risk, this chapter tests two specific hypotheses according to two different measurements: (a) *revenue equalization will decrease downside risk* and (b) *portfolio diversification will decrease both deviation and downside risk*. By testing these hypotheses, the results can show whether portfolio variance and value-at-risk are applicable to the nonprofit finance literature.

In addition to revenue diversification, several factors can influence revenue risk, such as financial flexibility and growth potential. Financial flexibility can connote financial leverage or the use of debt. According to Carroll and Stater (2009) and Mayer et

al. (2014), greater financial leverage can intensify or mitigate the impact of revenue risk. For instance, greater financial leverage become less vulnerable to economic shocks by enhancing the liquidity of the funds. Consequently, organizations with greater financial leverage can better plan their budgets for the future (thus minimizing risks), which is critical for stable revenue streams. Previous studies have measured financial leverage with the debt ratio (the total liability divided by total assets). A smaller debt margin means more financial leverage (Chang & Tuckman, 1994). Mayer et al. (2014) found that a greater debt margin (i.e., less financial leverage) increases revenue risk, which confirms H2.

Another view of debt margin exists even though most of the literature in the nonprofit finance sector views the debt margin as a sign of limited financial capacity. In the risk management literature, Acharya, Almeida, and Campello (2004) found that financially constrained firms tend to keep their debt level low so that they can increase future debt capacity. Keeping a low debt margin allows the firm to borrow more in the future when a profitable investment opportunity arises. Therefore, a higher debt margin can be the sign of healthy level of investment since the nonprofits have invested profitable assets that they do not need to save the debt capacity for future opportunities.

As well as debt margin, I use the share of permanent endowment relative to total endowment as a measure of financial flexibility. A high share of permanent endowment can show both an increase and a decrease in the impact of financial risk. As assumed in H2, a higher value of permanent endowment ratio can imply lower financial flexibility, which can increase the impact of revenue risk on nonprofits. If the nonprofits receive permanent endowments, they must preserve the principal in perpetuity. Such fixed assets

may not allow nonprofits room to deal with financial difficulties. Furthermore, the investment income from the endowments can naturally follow the fluctuation of the market value change of endowment. A higher share of restricted funds therefore can increase the revenue risk.

On the contrary, a higher ratio of permanent to total endowment can decrease the impact of revenue risk. According to Tobin (1974), a higher value of permanent endowment ratio can mean financial stability in the long term over the generations. In theory, nonprofits with a high permanent endowment are able to diversify their assets and stabilize their endowment revenue, which would lead to a reduction in revenue risk.

Growth potential signals that a nonprofit's financial health makes it a viable business. I measure growth potential by the fund balance (end-of-year assets minus beginning-of-year assets), retained earnings (total revenue minus total expenses), and net assets (total assets minus total liabilities and intangible assets) (Calabrese, 2012; Mayer et al., 2014). Higher fund balances, retained earnings, and net assets represent higher growth potential. Specifically, the fund balance refers to the accumulation of assets, such as savings or idle cash. Retained earnings refers to the accumulated surplus balances of the organization's programs. Tangible assets such as rainy-day funds, buildings or automobiles, excluding intangible assets or liabilities comprise net assets. These assets can involve maintenance expenses but also earn revenue from fixed assets. The appropriate level of surplus revenues can provide nonprofits with the opportunity to respond to unexpected events and seize opportunities when they come, which translates into less risk and more stable and sustainable growth. Mayer et al. (2014) and Carroll and Stater (2009) confirmed that greater growth potential decreases revenue risk. As a

counter hypothesis, the risk management literature, generally, has found that higher profitability or growth potential is greatly associated with high risk (Probst and Raisch, 2005; Reid and Turbide, 2011).

Table 3 Selected Literature on Nonprofit Revenue Risk

	Study	Explanatory Variable Measure	Revenue Risk Measure	Unit of Observation	Result
H1	Mayer et al. (2014)	HHI	CV	Nonprofits grossing more than $25,000	Confirmed
	Carroll & Stater (2009)	HHI	CV	Nonprofits **	Confirmed
	Yan et al. (2009)	HHI	Leverage (long-term debt / total assets)	Arts, culture, and humanities nonprofits	Confirmed
	Chikoto & Neely (2014)	HHI	Financial capacity growth*	Nonprofits **	Opposite result
H2	Mayer et al. (2014)	Debt margin Total margin	CV	Nonprofits grossing more than $25,000	Confirmed with debt margin
	Carroll & Stater (2009)	Debt margin Total margin	CV	Organizations**	Insignificant
H3	Mayer et al. (2014)	Net assets	CV	Nonprofits grossing more than $25,000	Confirmed with net assets
	Carroll & Stater (2009)	Fund balance Retained earnings	CV	Nonprofits **	Confirmed with fund balance and retained earnings

* Chikoto and Neely (2014) measured financial capacity growth using the percentage growth in total revenue, total fund balance, and unrestricted fund balance. ** These papers controlled for service type by including the National Taxonomy of Exempt Entities (NTEE) as a control variable.

Several organizational factors were also included as control variables in my study since funding capacity or stability may differ by organizational factors and size. Specifically, the following variables were included for organizational factors: years of

operation, the log of lagged employee salaries and benefits, the ratio of administration and fundraising expenses, the size of the governing board, the number of volunteers, and the share of unrelated business income (UBI). These variables represent the longevity of the nonprofit, its reputation, the involvement of communities, and the expanse of the organization. A greater value of these factors could decrease risk indirectly by changing the larger environment of the nonprofit.

Particularly high functional expenses and overhead costs (i.e., administration and fundraising costs related to total expenses) can be considered indicators of organizational inefficiency. Mayer et al. (2014) and Chikoto and Neely (2014) found that greater fundraising or administration expenses decreases deviation risk. This situation may result when an organization's management utilizes its limited resources to the best of their capabilities, which potentially increases revenue stability (Tuckman & Chang, 1991). Carroll and Stater (2009), however, did not find statistically significant results on the relationship between organizational efficiency and deviation risk. On the other hand, revenue can grow as the organizational efficiency increases until a certain point but can then decrease due to excessive spending on administration and fundraising activities (Weisbrod & Dominguez, 1986). Table 4 summarizes the detailed data sources.

Table 4 Data Sources

Variables	990 Form
Revenue Volatility	Total revenue (Part VIII, Line 12)
Revenue Diversification	Donative income (Part VIII, Line 1h) Earned income (Part VIII, Line 2g) Investment income (Part VIII, Line 3)
Administration Efficiency	Compensation (Part IX, Line 5) Total Expenses (Part I, Line 18)
Fundraising Efficiency	Fundraising Expenses (Part I, Line 16b) Total Expenses (Part I, Line 18)

Table 4 (continued) Data Sources

Debt Margin_t-1	Total liability (Part I, Line 21) Total assets (Part I, Line 20)
Permanent endowment	Endowment ratio (Part V, Line 2b)
Fund balance	End of year assets (Part X, Line 16, Column 1) Beginning of year assets (Part X, Line 16, Column 2)
Retained earnings_t-1	Total revenue (Part I, Line 12) Total expenses (Part I, Line 18)
Net assets*	Schedule D, Part VI, Total
Year of operation	Year of formation (Line L)
Employee salaries and benefits_t-1	Salaries, other compensation, employee benefits (Part I, Line 15)
Number of voting members of the governing body	Part I, Line 3
Number of volunteers	Part I, Line 6
Share of Unrelated Business Income	Part VIII, Line 12
Total functional expenses	Part IX, Line 25

*The net asset value is calculated as total assets minus intangible assets and liabilities. Note that t-1 stands for the one-year lag value of the variable.

Model Specification and Data

This study includes a primary model that investigates the impact of diversification on revenue volatility within a given subsector (service field) classified by National Taxonomy of Exempt Entities (NTEE) code. In this model, nonprofit revenue volatility is estimated as follows:

$$RR_{it} = RD_{it}\beta + FF_{it}\beta + GP_{it}\beta + C_{it}\beta + \varepsilon_{it}, \quad (4)$$

where RR, RD, FF, GP, and C for *i* category of NTEE in year *t* represent the following categories of variables, respectively: revenue risk, revenue diversification, financial

flexibility, growth potential, and control variables. This econometric model was adapted from Carroll and Stater's study (2009); the major difference is that I have applied an alternative measure of revenue volatility and diversification—value-at-risk and portfolio variance—in addition to the CV and HHI measures. Other differences are that Carroll and Stater's unit of observation comprises individual organizations from 1991–2003, and they control for subfields; in contrast, my unit of observation comprises 25 NTEE subfield types from 2008–2012.

Table 5 National Taxonomy of Exempt Entities (NTEE) Codes

NTEE	Description	NTEE	Description
A	Arts, Culture, & Humanities	N	Recreation & Sports
B	Education	O	Youth Development
C	Environment	P	Human Services
D	Animal-Related	Q	International, Foreign Affairs, & National Security
E	Health Care	R	Civil Rights, Social Action, & Advocacy
F	Mental Health & Crisis Intervention	S	Community Improvement & Capacity Building
G	Disease, Disorders, & Medical Disciplines	T	Philanthropy, Voluntarism, & Grant-Making Foundations
H	Medical Research	U	Science & Technology
I	Crime & Legal-Related	V	Social Science
J	Employment	W	Public & Societal Benefit
K	Food, Agriculture, & Nutrition	X	Religion-Related
L	Housing & Shelter	Y	Mutual & Membership Benefit
M	Public Safety, Disaster Preparedness, & Relief	Z	Unknown

* For the purpose of this research, 25 types of nonprofit organizations, coded from A to Y, were used, with the exception of the category "unknown," which is Z.

Note. From the National Center for Charitable Statistics. (2005). National Taxonomy of Exempt Entities. Retrieved from http://nccs.urban.org/classification/NTEE.cfm.

Before the data were aggregated by subsectors, my panel data included 85,286 total observations over five years. In terms of using Form 990 data, I followed the data-clearing filters suggested by Bowman et al. (2012), although my data still included different types of small organizations in the sample. The original data had 100,344 total observations, I excluded nonprofits if they (1) reported group returns (575; 0.57%), (2) used non-accrual accounting (10,872; 10.83%), and (3) used non-positive assets or revenue (respectively 62 and 3,549; 0.06% and 3.54%) (Bowman, Tuckman, & Young, 2012). Among the remaining 85,286 observations, each subfield included 750 observations on average (table 6). Subfields related to social science, civil rights, social action, and advocacy was the smallest group with fewer than 100 observations for each year.

Table 6 Number of Nonprofits by Year and Subfields

NTEE Code	Description	2008	2009	2010	2011	2012	Total
A	Arts, Culture, & Humanities	767	829	721	731	767	3,815
B	Education	2,712	2,852	2,733	2,833	2,967	14,097
C	Environment	228	231	208	219	225	1,111
D	Animal-Related	129	146	120	124	130	649
E	Health Care	3,467	4,133	3,904	4,026	4,088	19,618
F	Mental Health & Crisis Intervention	280	377	277	286	294	1,514
G	Disease, Disorders, & Medical Disciplines	136	156	159	158	159	768
H	Medical Research	136	144	144	136	145	705
I	Crime & Legal-Related	96	112	97	99	99	503
J	Employment	411	447	424	443	467	2,192
K	Food, Agriculture, & Nutrition	128	156	147	151	172	754
L	Housing & Shelter	836	932	728	753	792	4,041

Table 6 (continued) Number of Nonprofits by Year and Subfields

M	Public Safety, Disaster Preparedness, & Relief	61	76	69	70	74	350
N	Recreation & Sports	986	1,006	995	1,013	1,060	5,060
O	Youth Development	149	166	118	125	135	693
P	Human Services	2,004	2,130	1,710	1,782	1,805	9,431
Q	International, Foreign Affairs, & National Security	181	202	182	200	200	965
R	Civil Rights, Social Action, & Advocacy	29	23	24	28	34	138
S	Community Improvement & Capacity Building	832	893	858	882	956	4,421
T	Philanthropy, Voluntarism, & Grant-Making Foundations	494	518	527	575	623	2,737
U	Science & Technology	116	130	132	134	136	648
V	Social Science	23	25	24	31	32	135
W	Public & Societal Benefit	242	267	239	259	262	1,269
X	Religion-Related	166	177	155	154	170	822
Y	Mutual & Membership Benefit	1,669	1,710	1,823	1,806	1,842	8,850
	Total	16,278	17,838	16,518	17,018	17,634	85,286

The number of observation is 125 aggregated observations, with 25 NTEE fields over a five-year period between 2008 and 2012, retrieved from Form 990 (IRS, 2015). For the analysis, I use data after 2008 since Form 990 changed significantly in 2008, creating inconsistent data. The specific NTEE codes are shown in table 5. The variables were calculated from individual nonprofits, which were then averaged by NTEE

subfields. For example, for the value-at-risk of total revenue in percentage change, the percentage change in total revenue was calculated at the organizational level and the value at 1 percentile (lowest) was chosen within NTEE subfields. For dependent and control variables, values were calculated at the organizational level and then averaged by subsectors and year. For certain control variables, a few observations were excluded before I created the average value by subsector in cases where certain variables had a logarithmic form or negative or zero denominators. After dropping these observations, more than 99% of the total observations remained.

Table 7 Summary Statistics of Total Revenue by Sector (Total Revenue; $, %Δ; Average 2008-2012)

		Value		Volatility	
NTEE Code	Description	Total revenue ($)	Total revenue (%Δ)	Value-at-risk (1%; %Δ)	Coefficient of variation ($)
A	Arts, Culture, & Humanities	25,300,000	468.74	-0.81	5.91
B	Education	85,300,000	7.36	-0.71	3.65
C	Environment	22,600,000	2.71	-0.90	3.50
D	Animal-Related	21,300,000	0.22	-0.67	1.75
E	Health Care	197,000,000	12.42	-0.69	3.71
F	Mental Health & Crisis Intervention	24,700,000	0.36	-0.59	2.24
G	Disease, Disorders, & Medical Disciplines	48,300,000	0.47	-0.65	2.77
H	Medical Research	77,300,000	0.54	-0.80	3.00
I	Crime & Legal-Related	16,800,000	0.29	-0.72	2.67
J	Employment	27,000,000	0.12	-0.61	2.75
K	Food, Agriculture, & Nutrition	24,500,000	0.11	-0.65	3.95
L	Housing & Shelter	6,370,311	1,163.37	-0.86	3.76
M	Public Safety, Disaster Preparedness, & Relief	7,686,838	0.26	-0.83	2.32
N	Recreation & Sports	15,400,000	0.30	-0.59	6.73

Table 7 (continued) Summary Statistics of Total Revenue by Sector (Total Revenue; $, %Δ; Average 2008-2012)

O	Youth Development	10,100,000	0.27	-0.72	2.91
P	Human Services	26,000,000	5.52	-0.63	3.65
Q	International, Foreign Affairs, & National Security	96,100,000	4.64	-0.90	2.09
R	Civil Rights, Social Action, & Advocacy	30,200,000	2,579.77	-0.72	2.10
S	Community Improvement & Capacity Building	15,200,000	7.91	-0.82	3.96
T	Philanthropy, Voluntarism, & Grant-Making Foundations	34,200,000	30.96	-0.92	3.47
U	Science & Technology	137,000,000	1.10	-0.81	3.64
V	Social Science	39,500,000	0.21	-0.54	1.79
W	Public & Societal Benefit	41,500,000	3,758.98	-0.85	3.08
X	Religion-Related	15,400,000	0.43	-0.86	2.65
Y	Mutual & Membership Benefit	71,700,000	3.46	-0.83	6.31
Average		44,658,286	322.02	-0.75	3.37

Descriptive findings

Table 8 provides the descriptive statistics for each variable in the analysis. Nonprofits, on average, had a 12.17 standard deviation of the percentage change in total revenue, meaning they had a high revenue deviation. Their revenues seem to be concentrated on one revenue source between donations, earned income, and investment revenue (they had an HHI of 0.33). Their average portfolio across all subsectors was .84, or 84% of the standard deviation of the portfolio. Excluding the exceptionally high standard deviation in the portfolio in certain subfields, such as Youth Development, Human Services, and Mutual and Membership, the average standard deviation of the portfolio was approximately .37, or 37%. Note that a negative value-at-risk should be

interpreted with an absolute value. For example, a value-at-risk of -.75 for the percentage change of total revenue means that the nonprofits, on average, will have 75% or greater percentage change in 1% of the organizations.

For financial flexibility, the average debt margin was roughly $.53 per asset, or almost half their assets. The ratio of permanent endowment was around 15%. On average, organizations had positive growth potential, such as a $53 increase in assets in the current year, relative to assets in the previous year (fund balance), $2.38 of revenue per total expenses (retained earnings), and $17 million of net assets.

Organizations in the sample have operated for around 50 years on average and have a payroll of roughly $15 million. The average nonprofit spent around 6% and 3% on administration and fundraising, respectively. They have around 25 voting members on each organization's governing body. On average, they have approximately 1% of UBI and have expenses of $40 million. The correlations among the explanatory and control variables were low. The variance inflation test (VIF) also indicated that the model was controlled for potential multicollinearity.

Table 8 Descriptive Statistics

Variables	Mean	Standard deviation	Min	Max
Downside risk ($1,000 of total revenue; value-at-risk at 1%)	129.81	85.43	14.20	419.35
Downside risk (% Δ of total revenue; value-at-risk at 1%)	-0.75	0.17	-0.98	-0.27
Deviation risk ($ of total revenue; CV)	3.37	1.73	1.40	13.91
Deviation risk (%Δ of total revenue; CV)	12.17	16.02	-74.13	57.56
Portfolio diversification (standard deviation of portfolio)	0.84	3.57	0.09	33.35
Revenue equalization (HHI; 0→1; more diversified)	0.33	0.22	0.00	1.00

Table 8 (continued) Descriptive Statistics

FINANCIAL FLEXIBILITY				
Debt margin (total liability / total assets; lag)	0.53	1.07	0.14	11.54
Permanent endowment (% / total endowment)	15.62	11.10	0.20	39.61
GROWTH POTENTIAL				
Fund balance (million $; end assets / beginning assets)	53.12	52.21	4.27	214.13
Retained earnings (million $; total revenue / total expenses; lag)	2.38	3.99	-7.95	24.33
Net assets (million $; assets–intangible assets–liabilities)	17.24	19.86	0.56	86.81
CONTROL VARIABLES				
Years of operation (#)	47.14	11.06	24.09	68.61
Employee salaries and benefits (million $; lag)	14.87	19.50	1.14	85.57
Number of voting members of the governing body (#)	25.50	20.53	9.05	170.43
Number of volunteers (#)	4.54	0.76	2.73	6.69
Share of unrelated business income (UBI / total revenue)	0.01	0.01	0.00	0.05
Administration efficiency (administration expenses / total expenses)	0.06	0.03	0.01	0.12
Fundraising efficiency (fundraising expenses / total expenses)	0.03	0.02	0.00	0.09
Total functional expenses (million $)	38.50	42.73	2.81	207.26
Observations (*25 NTEE, 2008–2012)*	125			

* All values are rounded to two decimal places.

Estimation Results

My models used fixed effects with Driscoll-Kraay (D-K) standard errors, which correct for correlations between sectors and correlations within sectors. Prior to running the fixed effects regression model, several tests were conducted to estimate the method. To make a selection between the fixed and random effects models, I ran a Hausman test, which rejected the null hypothesis that the preferred model was random; thus, I selected the fixed effects model (Greene, 2010; Wooldridge, 2010). The average absolute

correlation suggested that all four models exhibited cross-sectional dependence (i.e., high average absolute correlation values) even though the Pesaran test for cross-sectional independence failed to reject the null hypothesis of no cross-sectional dependence (De Hoyos & Sarafidis, 2006). The modified Wald test for group-wise heteroscedasticity in fixed effects models indicated that all four models had heteroscedasticity. After considering these tests, I employed the fixed effects model using D-K standard errors. Hoechle (2007) suggested robust standard estimates for panel models (or fixed effects within regression models with D-K standard errors). This method helps to control for heteroscedasticity, autocorrelation, and cross-sectional dependency. Additionally, some variables such as debt margin, retained earnings, and employee salaries and benefits used one-year lag values to control the potential endogeneity of variables.

One potential problem is reverse causality between revenue diversification and volatility (Carroll & Stater, 2009). In other words, it is plausible that nonprofits with high revenue risk might diversify their revenue sources even though I have hypothesized that revenue diversification will reduce their revenue risk. To correct for this potential endogeneity, I also estimated a fixed effects model with instrumental variables as lagged dependent and explanatory variables. The fixed effects model with lagged explanatory variables was comparable with my model, however, which did not show any substantive differences in the statistical results. This situation shows that no apparent evidence was found that diversification is endogenously determined.

Combining the two different measures of diversification and volatility produced three models (Table 9). The first model used deviation risk measured by CV and portfolio diversification measured by the portfolio standard deviation, which is the square root of

the portfolio variance. This model showed statistically significant results in hypotheses 1(b) and 3. For H1(b), the existence of a more diversified portfolio decreased the deviation, as expected and as portfolio theory generally assumes. Specifically, as portfolio standard deviation increases (less diversification), the standard deviation of percentage change of total revenue is increased by 0.52, or 52%.

For H3, results show mixed directions for the impact of growth potential on deviation risk. The existence of a higher fund balance and retained earnings was found to increase the deviation risk, but higher net assets decreases the risk. Specifically, with a 1% increase in the current year assets compared to the previous year assets, the standard deviation of percentage change of total revenue is increased by 0.21, or 21%. As the retained earnings from the previous year increase by $1 million, the standard deviation of percentage change of total revenue increases by 0.463, or 46.3%. On the other hand, as net assets increase by 1%, the standard deviation of percentage change of total revenue is decreased by 0.095, or 9.5%, as previous research confirmed (Mayer et al, 2014). These results imply that nonprofits with larger accumulations of assets and net profits might pursue riskier revenue sources with high return (high deviation risk); one with higher fixed assets might be more inclined to keep themselves in the stable assets.

Model 2 tests the impact of revenue equalization (using HHI) on downside risk (value-at-risk). This model showed statistically significant results for hypotheses 1(a), 2, and 3. For H1(a), organizations with equally distributed revenue among donations, earned revenue, and investment income were found to encounter lower downside risk. For example, the average value-at-risk was -.75 across subsectors (Table 8), meaning that 1% of nonprofits can lose 75% or more. With a one unit increase in HHI (more revenue

sources or equally distributed sources), the percentage change of revenue is increased by 17.4%, which leads to a positive impact on the negative value-at-risk. Therefore, the average value-at-risk become approximately -.62 across subsector, meaning that 1% of nonprofits can lose 62% or more after perfect revenue equalization. This means that revenue equalization by adding more revenue sources or distributing equally among revenue sources reduces the downside risk.

Higher liability relative to an organization's assets (i.e., greater financial inflexibility) decreases downside risk, as opposed to my expectation in H2. An increase in total liability per assets has a positive impact on negative downside risk, which reduces downside risk. For instance, the average value-at-risk of -.75 moves toward zero due to the positive coefficient of .027 or 2.7%. This finding suggests that organizations with larger debt can be less likely to be in situations where the chance of extreme revenue loss will increase. Nonprofits with a higher debt ratio may already have stable financial conditions such that they do not need to save debt capacity for future investment. Potentially, these organizations are less influenced by extreme revenue loss. Furthermore, a higher ratio of permanent endowment relative to the total endowment decreases downside risk. Contrary to my assumption that an organization with more restricted funds could undergo a liquidity crisis, a high endowment ratio seems to reduce the impact of downside risk. Higher fund balances and net assets (i.e., greater growth potential) seem to increase downside risk, contrary to H3. It seems that organizations with higher asset increase are associated with higher downside risk. Additionally, nonprofits with more years of operation and that spend less on employee salaries seems to have less downside

risk. On the other hand, nonprofits that rely more on volunteers seems to have higher downside risk.

Compared to model 2, model 3 uses portfolio diversification as an explanatory variable. As I assumed in H1(b), portfolio diversification decreases downside risk. The negative coefficient of -.007 implies that a less diversified portfolio (higher variance) negatively influences the negative value-at-risk, meaning that more a diversified portfolio considering inter-correlations among different revenue sources decreases the impact of extreme revenue loss.

Table 9 Fixed-effect Regression with Driscoll-Kraay (D-K) Standard Errors

	(1)	(2)	(3)
	Deviation Risk (% Δ; CV)	Downside Risk (% Δ; value-at-risk at 1%)	Downside Risk (% Δ; value-at-risk at 1%)
Revenue equalization (HHI; 0→1; diversified)		0.174*	
		(0.081)	
Portfolio diversification (standard deviation of portfolio)	0.520***		-0.007***
	(-0.124)		(0.0004)
Debt margin (total liability / total assets; lag)	-0.822	0.027***	0.026***
	(-0.498)	(0.003)	(0.004)
Permanent endowment (%)	0.215	0.006**	0.005*
	(-0.259)	(0.002)	(0.002)
Fund balance (ln; end-beginning of year assets)	21.000*	-0.191***	-0.188***
	(-9.723)	(0.035)	(0.042)
Retained earnings (million $; revenue-expenses; lag)	0.463*	-0.003	-0.003
	(-0.174)	(0.002)	(0.001)
Net assets (ln; book value)	-9.544**	-0.073*	-0.076**
	(-3.185)	(0.027)	(0.024)
Year of operation (#)	-0.457	0.015*	0.017*
	(-0.663)	(0.007)	(0.007)
Employee salaries and benefits (ln; lag)	-13.796+	0.214**	0.211**
	(-7.122)	(0.057)	(0.066)
Number of voting members of the governing body (ln)	-28.356+	0.079	0.139
	(-15)	(0.544)	(0.594)
Number of volunteers	14.250***	-0.081**	-0.078***
	(-3.713)	(0.022)	(0.017)
Share of unrelated business income (UBI)	598.063**	-0.583	0.596
	(-163.714)	(2.805)	(2.732)

Table 9 (continued) Fixed-effect Regression with Driscoll-Kraay (D-K) Standard Errors

Administration efficiency (administration cost ratio)	68.107	-0.596	-0.263
	(-195.278)	(2.405)	(2.680)
Fundraising efficiency (fundraising cost ratio)	-150.315+	-2.105	-2.262
	(-84.968)	(2.297)	(2.621)
Total functional expenses (ln)	33.453*	-0.020	-0.079
	(-12.66)	(0.081)	(0.081)
Constant	13.489***	-0.331	0.435
	(-2.699)	(0.776)	(0.786)
R-squared F	9.639	7.398	12.966
Observations	125 (*25 NTEE, 2008–2012)*		

Table 10 shows results with both revenue equalization and portfolio diversification in the same models. A diversified portfolio (lower portfolio standard deviation) decreases both deviation risk and downside risk while revenue equalization measured by HHI become statistically insignificant. This direct comparison suggests that portfolio variance has a stronger influence on explaining revenue risks than revenue equalization. In other words, controlling for portfolio diversification seems to make HHI an insignificant measure for revenue diversification.

Table 10 Fixed-effect regression with Driscoll-Kraay (D-K) standard errors with both revenue equalization and portfolio diversification

	(1)	(2)
	Deviation Risk (% Δ; CV)	Downside Risk (% Δ; value-at-risk at 1%)
Revenue equalization (HHI; 0→1; diversified)	-9.150	0.167
	(13.336)	(0.085)
Portfolio diversification (standard deviation of portfolio)	0.516***	-0.007***
	(0.124)	(0.0004)
Debt margin (total liability / total assets; lag)	-0.870	0.027***
	(0.508)	(0.003)
Permanent endowment (%)	0.182	0.006*
	(0.268)	(0.003)

Table 10 (continued) Fixed-effect regression with Driscoll-Kraay (D-K) standard errors with both revenue equalization and portfolio diversification

Fund balance (ln; end-beginning of year assets)	21.158*	-0.191***
	(10.175)	(0.035)
Retained earnings (million $; revenue-expenses; lag)	0.481**	-0.003
	(0.148)	(0.002)
Net assets (ln; book value)	-9.597**	-0.075**
	(3.360)	(0.023)
Year of operation (#)	-0.492	0.018**
	(0.657)	(0.006)
Employee salaries and benefits (ln; lag)	-15.000	0.232***
	(8.653)	(0.060)
Number of voting members of the governing body (ln)	-26.440	0.105
	(14.983)	(0.559)
Number of volunteers	14.576**	-0.084***
	(4.257)	(0.020)
Share of unrelated business income (UBI)	633.091**	-0.043
	(210.691)	(2.603)
Administration efficiency (administration cost ratio)	69.309	-0.285
	(200.404)	(2.548)
Fundraising efficiency (fundraising cost ratio)	-151.017	-2.249
	(88.072)	(2.464)
Total functional expenses (ln)	30.834**	-0.032
	(9.016)	(0.084)
Constant	-9.150	0.167
	(13.336)	(0.085)
R-squared F	9.639	7.398
Observations	125 (*25 NTEE, 2008–2012)*	

Standard errors in parentheses. * $p < 0.05$ ** $p < .01$ *** $p < .001$. Some variables are applied in the logarithmic form (ln). The net asset value is calculated as total assets minus intangible assets and liabilities.

Discussion

This chapter addressed the following questions: Can nonprofits reduce downside revenue risk and revenue volatility by diversifying their revenue portfolios? How should they deal with different types of risks? My findings contribute in three different ways to answer these questions in the nonprofit finance and risk management fields. First, a well-diversified portfolio, as measured by portfolio standard deviation, stabilizes revenue inflows and also makes an organization less vulnerable to major losses (downside risk). In addition, organizations that focus on simply increasing the number of revenue sources may not effectively decrease revenue risks when also considering portfolio diversification. Therefore, having well-balanced portfolios with balanced assets is crucial for adjusting to continuous volatility. The portfolio should have an appropriate number of revenue sources and a correlation of revenue sources that reduces portfolio volatility. The balance eventually prolongs the long-term sustainability of the nonprofits.

Second, portfolio diversification matters more important for larger organizations. As both risk measurements are relative terms (CV and value-at-risk calculated based on the percentage change of total revenue), organizations that have larger expected revenue returns will suffer larger losses during times of financial crisis. Like a house of cards, nonprofits' portfolios require a more delicate balance as their size gets larger.

Lastly, what should nonprofit managers consider most in terms of portfolio diversification? Based on portfolio variance, the covariance of revenue sources is the key factor when deciding on portfolio diversification. By nature of the calculation of portfolio variance, portfolio variance will inevitably increase by adding more revenue sources unless the revenue sources are negatively correlated. If no correlation or inverse

relationships exist among the revenues, then the covariances will have no impact or will decrease the portfolio variance. In this case, the more revenue sources you have will increase portfolio variance by a lower amount. In reality, however, negative correlations among assets are rare. On the contrary, if revenue sources are positively correlated, portfolio variance becomes larger. It would therefore be better if the organizations pursue fewer revenue sources than adding more.

Conclusion

Using a panel of nonprofit financial information obtained from the IRS 990 form for the period between 2008 and 2012, I used a fixed effects regression model with D-K standard errors (which controls for the correlations within and between NTEE categories) to empirically examine whether revenue diversification influences revenue risks. I find that portfolio diversification can be helpful for nonprofits to reduce downside financial risk and has a stabilizing effect on revenue inflows. Other factors, such as financial liquidity and growth potential, also influence downside risk.

My findings have several implications for the nonprofit finance sector and for EVT in general. First, nonprofit organizations should have a proper portfolio with a greater number of revenue sources in place to reduce unexpected negative losses. Second, this study has applied alternative measures from those traditionally used in nonprofit finance literature: I used portfolio variance instead of HHI for the diversification measure and value-at-risk instead of CV for the risk measure. These alternative measures compensate for the weakness of the traditional measures and will help nonprofit managers and scholars to better consider the impact of portfolio diversification on downside risk. Finally, this study has applied the concept of value-at-risk from the

corporate finance sector for the nonprofit finance sector to greater understand risk. Future researchers should more specifically identify the correlations among nonprofit revenue sources so that nonprofit managers can develop well-fitted portfolios for their organizations that will eventually mitigate revenue risks and promote sustainable, long-term growth.

Chapter Three. The Influences of Budgetary Size on State and Federal Government Grant Contributions between 2000 and 2011

Government contributions are one major revenue source for nonprofits. In 2013, 32.5% of NPOs' revenue came from government funding (McKeever, 2015), which in general includes federal, state, or local governments. According to the Federal Assistance Award Data System (FAADS), 7% of total federal government grants, representing $36.3 billion of the $537 billion awarded in 2012, are awarded directly to NPOs (Lecy & Thornton, 2016). However, the primary mechanism for government grant awards to NPOs is by means of a "pass-through" of sub-awards from the federal government to state and local governments. The federal government transfers 80.1% ($431 billion out of $537 billions) of its grants to state governments; the amount of grant transfers from state and local governments to NPOs remains unknown.

In addition, the source of external revenue support (such as from the government) can affect the stability of nonprofit operations. Although government grants represent the second largest revenue source for nonprofits, that revenue can depend on the financial stability of different levels of government. For instance, governments at all levels of the U.S. government paid $130 billion to U.S. nonprofits for services in 2014, but these governmental bodies did not pay the full costs of the services performed; more than half of the nonprofits actually reported that the government had reimbursed them for less than 10 percent of their organizational costs (National Council of Nonprofits, 2017). The government was also late in providing much of this reimbursement. Of nonprofits that provided programs and services to different government bodies in 2014, around one-quarter found that the federal government had paid more than 30 days late. The problem

was even more serious at the state and local levels, where late government payments affected approximately 30–35 percent of nonprofit contractors (National Council of Nonprofits, 2017). Even though government support is generally known to be a stable and secure source of revenue for nonprofits, such underpayment or late payment can place nonprofits in financially difficult conditions. For these reasons, studying changes in government grants awarded to nonprofits can provide useful information; in addition, since government grants are becoming a more significant part of nonprofits' revenues in terms of maintaining financial security and mission-oriented objectives, an exploration of the understudied topic of government grants awarded to nonprofits is in order.

Most previous research on government contributions and government-NPO partnerships has focused on specific service fields, individual NPOs, or isolated cases, events, or states (Ashley & Slyke, 2012; Gazely, 2008; Hansamann, 1987; Luksetich, 2008; Saidel, 1991; Sandfort, 1999; Smith & Lipsky, 1993). However, little comprehensive or generalizable empirical research on government-NPO partnerships exists. In addition, few studies have examined government contributions to NPOs at different governmental levels. As the extent of state government grants to NPOs remains unknown (Ashley & Slyke, 2012; Lecy & Thornton, 2016), the topic is worth studying; the same can be said of federal government grant funding.

This study, therefore, estimates the effect of the size of government expenditures on the amounts of state and federal government grant awards to nonprofit organizations (NPOs) at the state level. It also analyzes the differences in the responses of the states and the federal government. A fixed effects model of states and years controls for five factors at the state level that were identified in previous research: service field, organization,

political activity, economics, and demographics. The empirical results demonstrate that smaller state government expenditures correspond to state government grant awards to NPOs, that state and federal grants target different demographic groups, and that NPOs with state contributions tend to diversify their revenue sources, whereas NPOs with federal contributions tend to simplify their revenue sources and encourage private funding. This research, then, is to contribute to a better understanding among nonprofit researchers and professionals of the allocation of state and federal government grant funding, and of its relationship to state government budgets.

This chapter is organized as follows. The hypothesis is developed in sections (1) Fiscal Federalism and NPOs and (2) State Government and Government Contributions to NPOs. NPOs' need for government grants is explained in Government Grants as a Tool in the Government-NPO Partnership. The section Legitimacy of Government Involvement through Grant Awards explains how government benefits by awarding grants to NPOs. Method and Model Specification explains the variables and data sources and introduces two models and the study methodology. Finally, the Results and Policy Implications and Conclusions sections include the interpretation of statistical results, a discussion of the implications of the study findings, and suggestions for future research.

External Income Sources in Nonprofit Organizations

NPOs' external income typically comes from three sources: direct public support, indirect public support, and government contributions (grants), as categorized under part I of tax Form 990 (an annual reporting return that certain federal tax-exempt organizations must file with the IRS). Regardless of income, all 501(c)(3) private foundations and most federal tax-exempt organizations are required to file Form 990

(Powell & Steinberg, 2006). NPOs' external income sources can be interrelated as inter-organizational relationships.

Government Grants as a Tool in the Government-NPO Relationship

Obtaining and maintaining government grants can be expensive (Grønbjerg, 1993), and organizations that receive such grants are required to undertake more complex and time-consuming financial reporting than those relying primarily on individual or private contributions (Anheier, 2005; Salamon & Anheier, 1997). For example, since 2007, the Office of Juvenile Justice Delinquency Prevention (OJJDP) (2014) has investigated and awarded grants to children's advocacy center programs annually; these are generally run by nonprofit and for-profit organizations and institutes of higher education. The OJJDP offers total one-year program funding of $750,000, with second- and third-year funding allocated on the basis of performance. This funding assists NPOs capable of providing coordinated support to victims of child abuse. However, the grant application process demands significant time and effort. In a given year, applicants must submit approximately 30 pages of information by May 25, including a project abstract, a budget and budget narrative, performance measures, and other data, all of which must be supported by bibliographical references. The review process includes an internal peer review, an external peer review, a review by the Office of the Chief Financial Officer, and a review by the Assistant Attorney General. The award is made no later than September 30 of the same year. Some NPOs require years of preparation before they can apply for this grant; indeed, Bowman (2011) noted that preparing a government grant proposal should be treated as a fundraising expense.

NPOs need government grants for three reasons. The first of these is revenue diversification; NPOs with a mix of revenue streams are better equipped to manage financial risk and to reduce their vulnerability to financial hardship and uncertainty (Carroll & Stater, 2009; Grønbjerg, 1993; Webb, 2014; Young, 2007). Because government grants tend to be larger than private contributions, they can also be used as seed money to match funds from non-grant sources. A balance of low-risk, predictable revenue from government grants and other high-return, higher-risk investments can support an organization's long-term financial sustainability (Seaman & Young, 2010). In an empirical test of the revenue sources of 156 foster care organizations, Kingma (1993) found that NPOs with a higher percentage of revenue from government sources experienced lower than average volatility levels.

Second, the reputation of NPOs in receipt of government grants engenders trust among private contributors (Andreoni & Payne, 2011). While private donors have little access to information about how NPOs spend their funds (Ostrom, 1996), NPOs must prove their experience and the legitimacy of their services or programs, and must have the necessary infrastructure to serve their clients in order to successfully apply for government grants. A government grant therefore conveys a powerful message to private contributors about an organization's managerial and administrative capacity. Nikolova (2014) found that private donors in the U.S. are more likely to respond positively to information about government funding from national and international sources than to information about organizational efficiency or age.

Finally, government grants are more broadly accessible than private contributions, and they are less likely to lead to mission displacement. Government support is more

widely dispersed than private contributions, which generally favor large and popular NPOs with simple mission statements (DiMaggio, 1987; Grønbjerg, 1993). In an investigation of the relationship between government and NPOs, Salamon (1995) concluded that government funding produces relatively small shifts in the missions of organizations that pursue diverse revenue streams. In summary, government grants encourage the nonprofit sector by enhancing financial security, supplementing private donations, and causing less mission displacement (Anheier, 2005; Grønbjerg, 1993).

Grant-Based Relationship Between State Government and NPOs

Figure 1 shows similar trends in the percentage change in government grants awarded to the five most populous states from 1995 to 2007. The percentage change in government grants awarded to nonprofit organizations was generally between 20% and -20%, except in 2000. However, the extent of the percentage change differed across states. For example, the amount of government grants awarded to nonprofit organizations significantly decreased from 1998 and 1999, hit its bottom in 2000, and increased again in 2001. The amount of government grants in Illinois and New York started to decrease by -75.05% and -35.73% respectively from 1998 to 2000. The amount of government grant in Texas, Florida, and California started to decrease -55.77%, -30.73%, and -56.34% respectively from 1999 to 2000. Government grants awarded in all five states drastically increased between 2000 and 2001: 70.62% (California), 25.90% (Florida), 53.75% (Illinois), 39.92% (New York), and 47.72% (Texas).

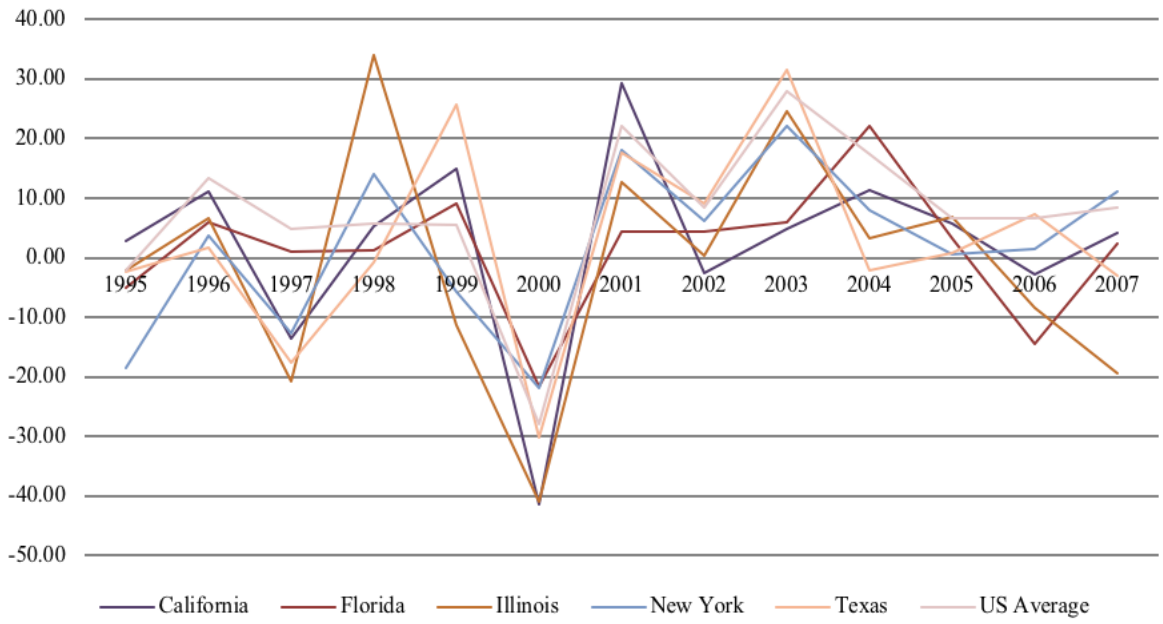

Figure 1. Percentage change in government grants awarded to nonprofits for the five most populous states and U.S. average

In Figure 2, the percentage change in government grants awarded to nonprofit organizations of 50 states by region varied from 1995 to 1999. For example, in the Midwest area (which includes 12 states ND, SD, MN, WI, MI, OH, IN, IL, MO, IA, KS, and NE), government grants awarded to nonprofit organizations increased sharply from 1995 to 1996 and subsequently followed similar trends with other regions. Interestingly, the percentage of government grants awarded to nonprofit organizations by region simultaneously decreased from 1999 to 2000, and simultaneously increased from 2000 to 2001. After 2001, the variance of the percentage change of government grants awarded to nonprofit organizations ranged roughly within 0 and 40. For example, the percentage of government grants awarded to nonprofit organizations in the Northeast area increased more than those in other regions from 2002 to 2003 and decreased more that other regions from 2003 to 2004.

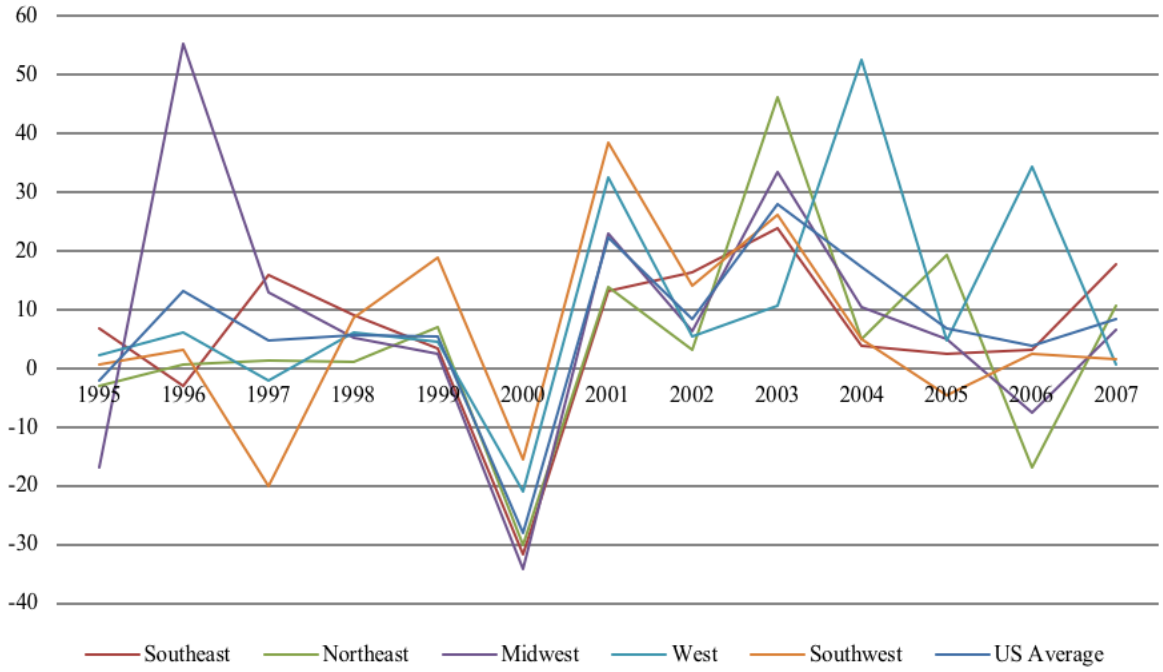

Figure 2. Percentage change in government grants awarded to nonprofits by region for 50 U.S. states

Note: Sourtheast region includes AR, MS, LA, AL, TN, KY, WV, VA, NC, SC, GA, FL, AL; Northeast region includes PA, NY, VT, ME, NH, MA, CT, RI, NJ, MD, DE; Southwest region includes AZ, NM, TX, OK; Midwest region includes ND, SD, NE, KS, MN, IA, MO, WI, IL, IN, MI, OH; and West region includes WA, MT, OR, ID, WY, CA, NV, UT, CO, AK, HI.

Theoretical Discussion

Several theories attempt to explain the relationship between government and nonprofit sector. Two relationships between government and NPOs are specific to the provision of public goods, complementary and supplementary relationship (Boris & Steuerle, 2006; Young 2000 & 2012). I exclude the adversarial assumption, which refers to the check and balance relationship between the government and NPOs, since this relationship is close to the advocacy activities, and not directly related to the provision of

public goods. Young (2012) defined such relationships as *complementary* or/and *supplementary*. In a *complementary* relationship, NPOs support the delivery and provision of existing government services that might include education, health care, museums, symphony orchestras, libraries, parks, housing, community development, and overseas aid. In general, these NPOs are funded by the government sector, and government expenditures tend to relate directly to the financing of NPOs; in other words, *as government expenditures increase, financing of NPOs also increases*.

In contrast, a *supplementary* relationship means that an NPO produces public services in lieu of the government. When the government begins to provide services, NPOs have less responsibility to produce them and thus experience lower demand. Examples of supplementary government-NPO relationships might include such activities as animal rescue, disaster relief, and environmental protection, as well as professional associations with social agendas, venture philanthropy organizations (e.g., the Robin Hood Foundation), public policy initiatives, private foundations (e.g., the Bill and Melinda Gates Foundation; the Turner Foundation), or international nongovernmental organizations. In some cases, these and other public services not yet provided by the government may be voluntarily provided by individuals. In such relationships, *as government expenditures increase, financing of NPOs decreases*.

Method and Model Specification

Method and Observation

The present objective is to assess whether state or federal government contributions to NPOs increase or decrease as state government expenditures increase. To address this question empirically, I apply a fixed effects regression model using Driscoll

and Kraay's (1998) standard errors to analyze data from multiple observations of 50 states over the period 2000–2011. In general, models can use fixed and random effects to control for certain fixed and unobserved intra-state characteristics, such as management style, historical and cultural differences, and geographical characteristics.

Driscoll and Kraay's (1998) standard errors make it possible to control cross-state correlation issues, which fixed and random effects models generally ignore. Driscoll and Kraay (1998) noted that certain unobservable factors might be shared both among and within states—for example, some states might encourage or discourage the activities of NPOs. Additionally, nearby states might be spatially correlated, or states might be affected by states that are politically or economically similar. Across the 50 states, there are 1,225 correlations (50 times 49 divided by 2) (Hoechle, 2007); these issues can be addressed using spatial correlation consistent (SCC) models (Driscoll & Kraay, 1998).

The present study focuses on NPOs that filed a Form 990 from 2000 to 2011 and reported gross receipts greater than or equal to $200,000 or total assets greater than or equal to $500,000 at the end of the tax year. Because the standards used to file Form 990 changed multiple times between 2000 and 2011, this study adopts the strictest standard (2010) for consistency. In addition, the study includes large NPOs required to file Form 990 but not 990-N, 990-EZ, or 990-PF (Table 11). This study focuses on large NPOs because of the high expenses to obtain and maintain grants (Grønbjerg, 1993), and organizations that receive government grants must undertake more complex and time-consuming financial reporting tasks than those relying primarily on individual or private contributions (Anheier, 2005). For those reasons, large NPOs tend to be more capable of obtaining and managing government grants.

Table 11 Versions of Form 990

Form to File	Status
990-N	Gross receipts ≤ $50,000
990-EZ	Gross receipts < $200,000, and Total assets < $500,000
990	Gross receipts ≥ $200,000, or Total assets ≥ $500,000
990-PF	Private foundation–regardless of financial status

Source: Which forms do exempt organizations file? (Updated 8 February 2016) (IRS) Retrieved from https://www.irs.gov/charities-nonprofits/form-990-series-which-forms-do-exempt-organizations-file-filing-phase-in

Models and Dependent Variables

In this first model, the dependent variable is the total amount of state and local government grants awarded to state-based NPOs. Because no data are available for direct measurement of state government grants awarded to NPOs, I calculate this amount by a proxy variable. Specifically, to calculate the total amount of state government grants per capita, I subtract the amount of federal grants from the total amount of government grants to NPOs. I then divide the total amount of state government grants by the total state population.

Model 1

$$\begin{aligned} Per\ Capita\ State\ Government\ Contribution_{it} \\ &= State\ Government\ Expenditure_{it}\theta_1 \\ &+ Federal\ Government\ Expenditure\ on\ Grant_{it}\theta_2 \\ &+ Service\ Field_{it}\theta_3 + Organizational\ Factors_{it}\theta_4 \\ &+ Political\ Factors_{it}\theta_5 + Economic\ Factors_{it}\theta_6 \\ &+ Demographic\ Factors_{it}\theta_7 + \tilde{\varepsilon}_{it} \end{aligned}$$

$$Per\ Capita\ State\ and\ Loal\ Government\ Contribution_{it}$$

$$= \frac{Total\ government\ grants\ to\ NPOs - \ federal\ grant\ to\ the\ recipients}{Total\ State\ Population}$$

Data on the total amount of government grants were retrieved from Form 990 data archived by the Internal Revenue Service (IRS) (IRS, 2015).

In the second model, the dependent variable is the total amount of federal government grants awarded to NPOs in a given state.

Model 2

$$Per\ Capita\ Federal\ Government\ Contribution_{it}$$
$$= State\ Government\ Expenditure_{it}\theta_1$$
$$+ Federal\ Government\ Expenditure\ on\ Grant_{it}\theta_2$$
$$+ Service\ Field_{it}\theta_3 + Organizational\ Factors_{it}\theta_4$$
$$+ Political\ Factors_{it}\theta_5 + Economic\ Factors_{it}\theta_6$$
$$+ Demographic\ Factors_{it}\theta_7 + \tilde{\varepsilon}_{it}$$

To calculate this variable, the total amount of federal government grants is divided by the total state population (Model 2). Data on amounts of federal government grants awarded to NPOs were collected from USA Spending (2016). This variable does not include negative values.

Dependent Variable for Model 2

$$Per\ Capita\ Federal\ Government\ Contribution_{it}$$
$$= \frac{Amount\ of\ federal\ grant\ to\ the\ recipients}{Total\ State\ Population}$$

Amounts of state and local and federal government grant support to the nonprofit sector fluctuate, and patterns differ across states. Appendices 1 and 2 detail the percentage changes in state and federal government grants to NPOs in all 50 U.S. states. Figure 3 shows that the amount of state government contributions has fluctuated over the study period, and that the patterns differ across the 50 states. In contrast, the amount of federal government contributions has historically exhibited similar cross-state patterns (figure 4).

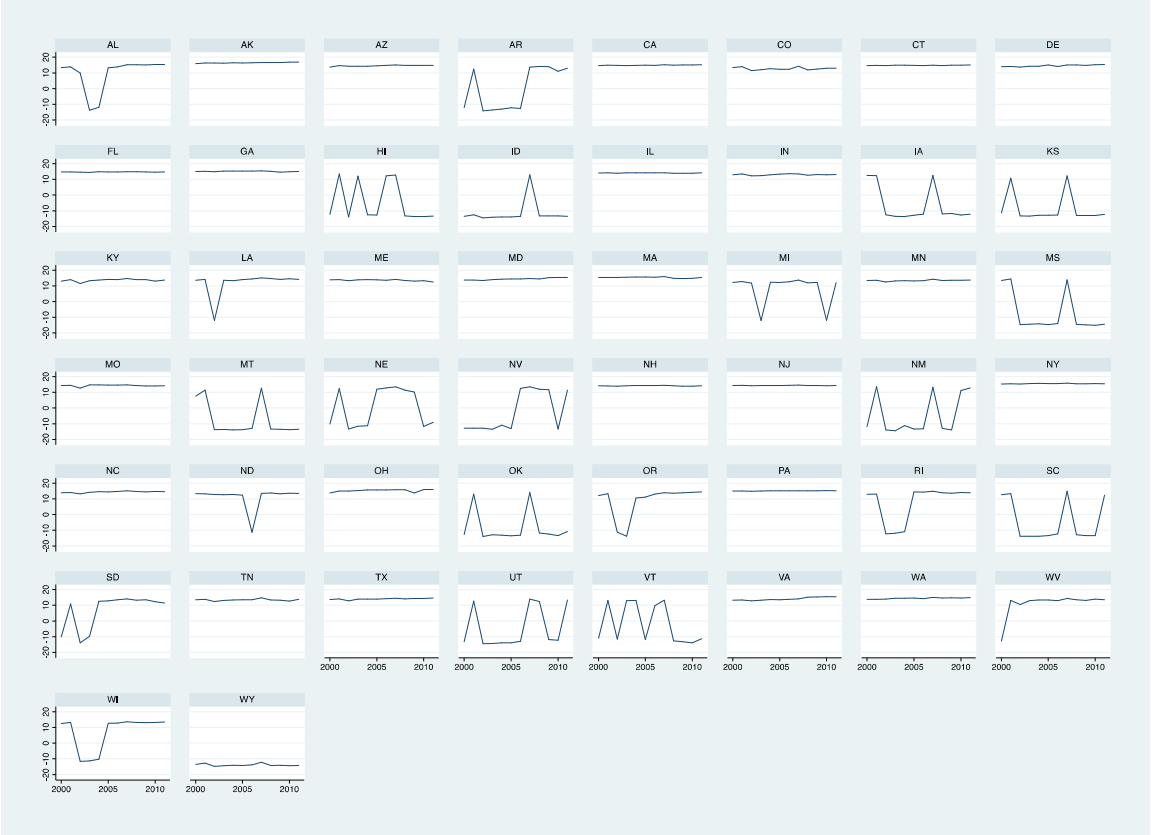

Figure 3 Average State Grants Awarded to NPOs by U.S. States (2000–2011, %Δ)

Note. The horizontal axis indicates the years from 2000 to 2011, and the vertical axis indicates the percentage change of state government grant funding to the NPOs

Figure 4 Average Federal Grant Funding Awarded to NPOs by 50 U.S. States (2000–2011, %Δ)

Note. The horizontal axis indicates the years from 2000 to 2011, and the vertical axis indicates the percentage change of federal government grant funding to the NPOs.

Explanatory and Control Variables

For the explanatory variable, the spending size of the state government is measured by the size of its budgetary expenditure as a proportion of the gross state product (GSP), as follows:

$$Total\ Staet\ Government\ Expenditure_{it} = \frac{Total\ state\ government\ expenditure}{Gross\ state\ product}$$

The control variables consist of numerous measurements dependent on the relevant factors such as state government expenditures, service field and organizational factors, nonprofit finance, and state characteristics (economy, politics, and demographic).

Table 12 Variables and Literature

Variable	Literature
State Government Expenditures	Young (2012); Carroll & Stater (2009)
Service Field & Organizational Factors	Salamon (1987); McCarthy (1994); Bremner (1988);
Nonprofit Finance	Calabrese (2011); Carroll & Stater (2009); Frumkin & Keating (2002); Hager (2001); Keating et al. (2005); Trussel et al. (2002); Tuckman & Chang (1991)
State Characteristics (Economy, Politics, and Demographic)	Hall (2006); Twombly (2003); Gittell & Tebaldi (2006); Prentice (2015); Keating et al. (2005)

The service classification comprises of six distinct fields selected from the National Taxonomy of Exempt Entities (NTEE): art, culture, and humanities; education; health; human services; public and social benefit; and religion (The Urban Institute, 2012). The distribution of government grants to NPOs differs across service fields. Because NPOs provide different services with distinct characteristics, it is necessary to control for the size of nonprofit sectors in relation to the service field (DiMaggio, 1987; Froelich, 1999; Lipsky & Smith, 1990; McMurtry, Netting, & Kettner, 1991).

Organizational factors such as income sources, spending sources, and financial health are used to measure the size of the NPO support from government (Anheier, 2005; Grønbjerg, 1993).

Table 13 Data Sources

Dependent Variable	
State and Federal Government Grants	IRS 990 Form (2014); Federal Assistance Awards Data (FAADs) (2016)
Explanatory and Control Variable	
Service Field	IRS 990 Form (2014)
Organizational Finance	IRS 990 Form (2014); Lam & McDougle (2015); Letts (1999)
Political Characteristics	Berry, Fording, Ringquist, Hanson, & Klarner (2010, 1998); Erikson, Wright, & McIver (1993); Jordan & Grossmann (2016); Klarner (2013); McDonald (2016)
Economic Characteristics	Federal Reserve Bank of Philadelphia (2016); U.S. Bureau of Labor Statistics (2012, 2015); U.S. Census Bureau (2012, 2015a, 2015b, 2016)
Demographic Characteristics	Cooperation for National Community Service (2015); Jordan & Grossmann (2016); Klarner (2013) Kramer (1981); U.S. Census Bureau (2016)
State Government Finance	Urban Institute (2015)

Nonprofit financial condition may lead to different sizes of government support. These financial ratios are used to measure the size of nonprofit financial stability: membership income ratio, asset-sales income ratio, and inventory-sales income ratio. Lastly, state economic, political, and demographic factors can affect the size of government support to nonprofit sector (Brown et al., 2012). For instance, a state's economic condition may influence awards of state government grants to NPOs. In general, economically stable states tend to distribute greater amounts of state government grant funding, and there is evidence that median household income, unemployment rate, and poverty rate tend to influence the extent of government financial support (Bennett,

2012; Carroll & Stater, 2009; Joassart-Marcelli & Wolch 2003; Keating et al., 2005; Prentice, 2015). The economic factor comprises of unemployment rate (U.S. Bureau of Labor Statistics, 2012), median household income (U.S. Census Bureau, 2012), poverty rate (U.S. Census Bureau, 2012), and the coincident index (Crone & Clayton-Matthews, 2005; Stock & Watson, 1989). The higher coincident index shows the state economic health. Higher value shows more active state economy.

A state's political and demographic characteristics may influence the amount of government contributions to NPOs. Governments alter levels of financial support for NPOs according to their social and political agendas, ideologies, and priorities (Hall, 2006, 2010). Or, governments are willing to support NPOs according to demand for public services, which may vary due to local demographic factors such as wealth distribution, volunteerism, population density, population growth rate, education level, age, and racial structure (Gamm & Putnam, 1999; Gittell & Tebaldi, 2006; Lincoln, 1977; Prentice, 2015; Saxton & Benson, 2005; Skocpol, Ganz, & Munson, 2000; Twombly, 2003). Table 13 shows detailed data sources.

Table 14 Descriptive Statistics of Dependent and Explanatory Variables

Variables (Model 1 and 2)	*Total Observation (n = 600) 50 States, 2000–2011*			
	Mean	*SD*	*Min*	*Max*
State Grants to NPO ($2011, millions)	80.67	154.43	-96.00	1153.08
Federal Grants to NPOs ($2011, millions)	53.43	47.67	1.54	482.09
State government expenditure (Total state expenditure/SGP)	7.86	9.80	0.37	67.71
Federal government expenditure	322.31	378.00	4.64	3341.82
Gini Index (0 equality→1 inequality)	0.45	0.02	0.38	0.50
Number of Art NPOs/NPO total	0.04	0.02	0.00	0.13
Number of Education NPOs/totals	0.18	0.05	0.04	0.32

Table 14 (continued) Descriptive Statistics of Dependent and Explanatory Variables

Number of Health NPOs/totals	0.30	0.08	0.12	0.68
Number of Human Service NPOs/total	0.24	0.06	0.05	0.39
Number of Social Service NPOs/totals	0.11	0.04	0.03	0.28
Number of Religious NPOs/NPO total	0.01	0.01	0.00	0.04
Number of employees (#)	0.47	0.17	0.10	1.19
Number of NPOs (#)	0.31	0.35	0.01	1.77
NPOs with gross receipts above $1M (%)	1.32	0.73	0.09	4.99
Membership income/total revenue	0.01	0.01	0.00	0.06
Asset sales income/total revenue	0.02	0.04	-0.18	0.34
Inventory sales/total revenue	0.00	0.00	0.00	0.03
Personnel cost/total expense	0.31	0.05	0.14	0.47
Fundraising administration cost ratio (Fundraising cost/total expense)	0.00	0.00	0.00	0.02
Revenue diversity score (HHI)	0.38	0.14	0.01	0.74
Governor non-majority party (0 majority party; 1 non-majority party)	0.01	0.11	0.00	1.00
State ideology score (Con→ Lib)	-0.15	0.13	-0.65	0.35
Voting turnout ratio (Vote for Highest Office/Voting Eligible Population)	0.52	0.11	0.29	0.78
Unemployment rate (%)	5.70	2.10	2.30	13.80
Poverty rate (%)	12.27	3.24	4.50	23.10
Coincident index (#)	146.29	18.66	98.08	227.45
Volunteer hours per resident (hour)	3.85	1.42	-3.91	13.74
Volunteer rate (%)	0.30	0.07	0.09	0.56
Population growth rate (Δ%)	0.01	0.01	-0.06	0.04
Population density (# per sq. mile)	188.89	253.51	1.10	1189.26
College graduation rate (%)	25.43	4.79	14.83	39.10
Age under 18/state total	0.25	0.02	0.20	0.32
Age over 65/state total	0.13	0.07	0.06	0.79
Black population/state total	0.11	0.10	0.00	0.39
Native Indian/Alaska Natives/state total	0.02	0.03	0.00	0.15

* All values are rounded.

Results

The empirical results confirm that the size of the state government budget inversely relates to the amount of state government grants. According to table 15, for every 1% increase in state government expenditures relative to GSP, the state government funding awarded to NPOs per capita decreased by around $6. The size of federal government expenditures exhibits a negative relationship with the amount of state and local government grant awards to NPOs. For every 1% increase in federal government expenditures on grants relative to SGP, per capital state and local government funding awards to NPOs decreased by $.05. With regard to the service field variable, the state and local government contribution is not correlated with service field type except for faith-based religious NPOs.

With regard to organizational factors, per capita state and local government funding positively correlates with size of human resources, suggesting that nonprofits with a larger staff size tend to receive more grants than nonprofits with fewer employees. On the other hand, gross receipt size larger than 1million dollars positively influences the federal government grants. NPOs' financial structures differently affect state and federal grant funding. State and local grant funding negatively correlates with membership income and personnel costs but positively correlates with inventory sales income. In contrast, federal government contributions positively relate to membership income and fundraising administration costs but negatively relate to inventory sales. Similarly, NPOs' financial health also has different effects on state and federal contributions; specifically, revenue diversification positively relates to state grant funding, but negatively relates to

federal grant funding. State and local governments award more grants to nonprofits in the state where their governor is in the non-majority party (Klarner 2003).

Economic factors also have a statistically significant effect on both state and federal grant awards. As a state's economy improves, state and local grant funding decreases but federal grant funding increases. It is worth noting that demographic factors exert differing effects on state and local and federal grants. In particular, state and local government contributions increase in states where the population density is higher, the population ratio of residents over 65 years is higher, and the population ratio of residents under 18 years is smaller. Federal government contributions increase in the states where the number of volunteer hours per resident is smaller, and the black and American Indian/Alaskan Native population is larger. In short, federal grants are more commonly associated with traditionally underserved populations.

Table 15 Fixed Effects Regression Results

	Model 1			Model 2		
	State and local government contribution per capita ($2011)			Federal government contribution per capita ($2011)		
	β		S.E.	β		S.E.
Explanatory Variables						
State government expenditure (per capita: state expenditure/SGP;$2012)	-5.48	**	2.25	1.67	*	0.92
Control Variables						
Federal government expenditure (.01)	-0.05	**	0.02	0.04	***	0.01
Gini Index (0 equality→1 inequality)	145.61		312.41	-129.84		121.03
Number of Art NPOs/NPO total	-132.87		278.38	-73.79		66.67
Number of Education NPOs/totals	77.71		134.11	-17.82		34.09
Number of Health NPOs/totals	152.26		126.03	-26.65		43.90
Number of Human Service NPOs/total	51.75		143.48	-47.17		30.37
Number of Social Service NPOs/totals	-61.51		136.85	-15.52		43.14

Table 15 (continued) Fixed Effects Regression Results

Number of Religious NPOs/NPO total	680.28 **	285.86	-180.70	143.18
Number of employees (#)	113.24 **	55.98	-8.24	9.24
Number of NPOs (#)	-128.66	111.75	3.26	31.09
NPOs with gross receipts above $1M (%)	-1.58	8.29	5.08 *	2.85
Membership income/total revenue	-3788.61***	716.31	384.63**	148.93
Asset sales income/total revenue	-75.56	54.95	29.23	17.69
Inventory sales/total revenue	1585.65**	748.07	-369.21**	157.08
Personnel cost/total expense	-143.05*	71.40	-32.41	22.58
Fundraising administration cost ratio (Fundraising cost/total expense)	662.32	2014.35	3498.91***	987.41
Revenue diversity score (HHI)	273.00***	37.10	-60.90***	11.60
Governor majority party (0 majority; 1 non)	17.57**	8.11	-1.38	1.92
State ideology score (Con→ Lib)	-13.36	18.45	-7.39	4.47
Voting turnout ratio (Vote for Highest Office/Voting Eligible Population)	41.19	44.27	-9.59	29.53
Unemployment rate (%)	-15.55***	3.03	-0.74	1.08
Poverty rate (%)	2.99	1.78	-0.52	0.40
Coincident index (#)	-1.61***	0.38	0.48**	0.18
Volunteer hours per resident (hour)	1.20	1.77	-0.69**	0.25
Volunteer rate (%)	46.99	38.95	-3.62	12.41
Population growth rate (Δ%)	-241.00	203.24	113.86	155.59
Population density (# per sq. mile)	1.43***	0.31	-0.28	0.18
College graduation rate (%)	-2.09	5.98	2.51	1.77
Age under 18/state total	-1045.18**	380.88	-218.41	170.49
Age over 65/state total	40.76**	19.43	7.25	4.27
Black population/state total	-462.86	490.91	705.49***	167.94
Native Indian/Alaska Natives/state total	-1363.92	969.90	1183.28***	378.44
Constant	10.42		-1.98	

*p <.10; **p <.05; ***p <.01

Discussion

This research addresses the influence of state and federal government expenditures on state and federal grant contributions to NPOs. As previous studies of government grant awards have focused on specific cases or individual organizations or

states, their findings have not been generalizable. The present study focuses instead on the comprehensive and relative effects of a range of factors on state and government contributions.

According to the results, states with small expenditures tend to award more state government grants to nonprofits. This suggests that the grant-based relationship between state and local governments and local NPOs is supplementary—in other words, state governments with smaller expenditures award more grants to local nonprofits to produce the public services on behalf of state government, reflecting supplementation of nonprofit activity. On the other hand, nonprofits in the states with large expenditures tend to receive a lot of federal grants, which implies complementary grant-based relationships between federal government and NPOs. Local nonprofits tend to produce public services that state governments also produce when they receive more federal grants.

In addition, the characteristics of nonprofits significantly influence the amount of government grants. For instance, NPOs receiving state contributions also tend to diversify their revenue sources, expanding inventory sales. Those receiving federal contributions tend to simplify their revenue sources with recruiting a lot of membership fees. This result could also suggest that the volatility of state and federal grant funding may influence NPOs' financial activities; specifically, state grant funding fluctuated during the study period (either increasing or decreasing), and these patterns differed across states (Appendix 1). This encourages NPOs that receive state and local contributions to diversify their revenue sources and to become larger employers, making them better able to withstand economic recessions or other external shocks that may affect state government funding. In contrast, federal grant contributions show a

continuous increase over the study period, and their distribution patterns are similar across states (Appendix 2). This growth stability allows NPOs receiving federal grants to focus on their grant programs and fundraising activities, placing less emphasis on diversifying revenue sources or expanding the organization.

Since this study aims to analyze the comprehensive impact on government contributions, the results include some limitations. First, the use of the IRS Form 990 confined the analysis to larger nonprofits. The study therefore excluded smaller NPOs that received state government grants. This disproportionate sample, however, could reflect reality better since large NPOs are better equipped to apply for and manage government grants. Another limitation is that the computation of state government grants used a proxy measure (total government contribution minus federal government grants) to estimate the amount of state government grants, as the IRS Form 990 does not identify the sources of government contributions.

The study confirms that state government expenditures correspond to state and federal government grant awards to NPOs at the state level. It also explains the differing relationships between state and federal governments and NPOs, highlighting specific factors. Future research should investigate whether the government-NPO relationship differs by service field, and whether state expenditure on a given service field relates to government grant contributions for NPOs in that field.

Chapter Four. Coping with Economic Crisis: The Buffering Capacity of U.S. States for the Nonprofit Sector

Dealing successfully with unexpected external shocks is crucial for the survival of organizations not only in the for-profit and governmental sectors but in the nonprofit sector as well. Unfortunately, compared to the number of studies on the private and public sectors, only a relatively small number of studies have examined the effects of economic crises on the nonprofit sector. Some of these studies on the nonprofit sector assume that economic crises negatively influence nonprofit organizations. For example, the 2008 economic recession resulted in a reduction of public and private funding available for nonprofit organizations, leading to the closure of programs, facilities, and even whole organizations (Cannon & Donnelly-Cox, 2015). On the other hand, the nonprofit sector may react differently to a recession by expanding its range of services or increasing the number of nonprofit organizations to respond to the increased service demands. A recession can result in the creation of more nonprofit organizations, although organizations established during a recession period are generally smaller in size, with fewer staff members, smaller budgets, greater reliance on volunteers, and a focus on a specific subfield, such as housing and homeless shelters (Wilhelm, 2010).

Economic crises have occurred repeatedly in history. Two major recessions occurred between the years 2000 and 2012: in the years 2000–2002 and 2007–2008. The characteristics of these recessions are different from each other. The 2000–2002 recession, also known as the dot-com bubble, was an economic bubble period caused by the extreme growth and subsequent failure of internet and information-technology companies. The growth of the internet and telecommunication business in the late 1990s

created large investment opportunities for individual investors, venture capitalists, and information-technology companies. The information-technology companies wanted to grow faster to increase their market power and expanded beyond their capacity with low interest rates. In addition, investors wanted to earn quick and large returns from the growing stock market. However, the stock market crashed in 2000 once the bubble had reached its peak (Glassman, 2015). After the sharp drop in stock prices, investors started to sell their stocks even at a loss and the companies concerned began to have liquidity issues (Goldfarb et al., 2007). The attacks of September 11, 2001 accelerated the market downturn. Many employees lost their jobs and only 48% of technology companies survived through 2004 (Berlin, 2008).

On the other hand, the economic recession of 2007–2008, also known as the Great Recession (Blinder, 2015), was one of the worst economic crises since the Great Depression of the 1930s. The crisis began with a collapse of the subprime mortgage market in the United States. The bubble in the mortgage market grew due to excessive mortgage lending with low interest rates and risky loans encouraged by the government sponsored enterprises, Fannie Mae and Freddie Mac. As a result, the delinquency rate rose, which led to a devaluation of mortgage-backed securities and liquidity issues. The subsequent collapse of the mortgage market in the U.S. triggered an international banking crisis, involving the bankruptcy of the Lehman Brothers as well as the financial issues of major banks and financial institutes in Europe and Asia. The ensuing economic recession affected not only many individuals and domestic and international companies, but also the nonprofit sector.

This chapter aims to investigate the number of nonprofit organizations at the U.S. state level to clarify which factors regulate and adjust the influence of economic recessions on the nonprofit sector during the two economic crises of 2000–2002 and 2007–2008. To test this research question, an empirical analysis was conducted on the nonprofit sector in 50 states as the unit of analysis using panel data for 2002 to 2012 retrieved from Form 990. The empirical results contribute to the theory of nonprofit risk management and explain the unique characteristics of the nonprofit sector in terms of its response to economic crisis.

Literature Review

Economic Recessions and Nonprofit Revenues

Economic recessions can cause changes in financial support for nonprofits from individual donors, the for-profit sector, and the government. First, contributions to nonprofits from individuals change due to recessions. Gittell and Tebaldi (2006) suggested several factors that can influence personal contributions across states, including personal income, the marginal tax rate as the price of giving, and economic and demographic factors. Gittell and Tebaldi (2006) measured economic and demographic factors using variables such as average contributions, personal incomes, net capital gains, volunteering rates, educational levels, percentage of baby boomers (aged 35–54 years) in the population, and other control variables. Most of the data were for the years 2000 to 2002. They concluded that baby boomers had limited discretionary capital to spend on charitable contributions during the 2000-2002 recession. Because baby boomers had been perhaps overly optimistic in the mid- to late-1990s about future economic conditions,

they were left with debts from purchases made during those optimistic yeas and thus had to reduce their giving during the 2000-2002 recession.

Second, for-profit firms may also change their contributions to nonprofits. Total giving (the sum of direct cash, foundation cash, and non-cash contributions) from 95 private companies decreased by 5% from 2006 to 2008 and increased 7% from 2008 to 2009 (Rose, 2010, p. 12). Changes in non-cash contributions mostly drove the changes in total contributions from private companies. Non-cash contributions decreased by approximately 8% from 2006 to 2008 and increased by about 16% from 2008 to 2009. Cash contributions marginally decreased from 2007 to 2009. Other researchers have also concluded that there was an increase in charitable contributions from private companies during the 2008 recession (Brewster, 2008; Urriolagoitia & Vernis, 2012). Corporate contributions may also shift to different nonprofit subsectors during a recession. According to Cohen (2009), corporate philanthropists strategically gave more to the areas closely related to their businesses, such as community development, public image, brand awareness, and consumer allegiance. However, they reduced contributions to certain fields such as the arts and culture, nonprofit housing, and community development nonprofits.

Lastly, economic recessions can also affect the support from government, resulting in changes to nonprofit funding restrictions, for example. Carlson et al. (2010) found that the 2000-2002 recession expedited performance-measurement reform in Oregon, which affected the eligibility of nonprofit organizations for financial benefits. Due to the 2000-2002 economic recession, Oregon's general budget of $14 billion was cut by around $2 billion. As a result, the Oregon legislature required the Oregon Progress

Board to develop performance-measurement guidelines that required nonprofit organizations to meet statewide goals. These expanded and intensified performance-related restrictions caused drastic change in funding sources for nonprofits in the state. This example from Oregon suggests nonprofits' support from governments may decrease during recessions.

Responses of Nonprofits to Economic Recession

In addition to the change in nonprofit revenue sources, the recession influenced the financial behavior of nonprofit organizations. Calabrese (2012) concludes that nonprofit organizations reserved unrestricted net assets, rather than restricted assets, during the recession period. In general, nonprofit organizations retain unrestricted net assets to protect themselves against financial vulnerability. For example, the health and housing subsector tends to maintain its unrestricted net assets to pay debts, or they are required to have a certain unrestricted net asset balance as a reserve, rather than having leverage. However, nonprofit organizations in the education subsector reduce unrestricted net assets faster than leverage is acquired. This may indicate that leverage is a cheaper financing source for nonprofit organizations in the education sector. Although the reaction of nonprofit organizations toward financial shock varies by subsector, nonprofits generally increase unrestricted net asset accumulations to decrease their financial vulnerability.

Prentice (2015) also stresses the importance of liquidity reserves in responding to financial shocks. He used variables such as the ratio of working capital (the difference between current assets and the sum of liability and restricted net assets) to total assets and months of spending (the number of months an organization could survive after losing all

current income and maintaining its spending on operations at a constant level) (Bowman, 2011, p. 179). Previous research has found that these variables are negatively related to financial vulnerability (Bowman, 2011; Keating et al., 2005; Prentice, 2015). The more liquidity nonprofit organizations have, the less financially vulnerable they are.

Regarding fixed and unfixed revenue sources, the earned income and assets of nonprofit organizations can be important variables to use in measuring the influence of a recession. Many studies have shown that income and asset levels are negatively related to financial vulnerability, whereas the ratio of net income to total assets is positively related to financial vulnerability (Bowman, 2011; Keating et al., 2005). In other words, organizations with larger asset reserves and smaller net incomes and revenues are less vulnerable to financial shocks, whereas nonprofit organizations with smaller asset reserves and larger net incomes and revenues are more vulnerable to financial shocks (Prentice, 2015).

Specific types of revenue sources can make nonprofit organizations vulnerable to economic downturns (Carroll & Stater, 2009; Grønbjerg, 1993; Kingma, 1993). For example, nonprofit organizations that receive more than half of their funding from donations and contributions experience higher revenue volatility than those that rely more on commercial revenue (Carrol & Stater, 2009; Keating et al., 2005; Prentice, 2015). This is because contributions and donations are sporadic and heavily dependent on economic and political conditions (Keating et al., 2005).

In addition to the types of revenue sources, the diversity of revenue sources is also an important factor that influences financial vulnerability and revenue volatility. In general, nonprofit organizations with few revenue sources are more vulnerable to

economic recession than those with diverse revenue sources (Calabrese, 2011; Carroll & Stater, 2009, Frumkin & Keating, 2002; Greenlee & Trussel, 2000; Hager, 2001; Keating et al., 2005; Trussel et al., 2002; Tuckman & Chang, 1991).

Hypotheses and Variable Specification

Previous studies focus on the impact of economic recessions on nonprofit revenues. However, few studies have explored the impact of nonprofit size (Saxton & Benson, 2005; Grønbjerg & Paarlberg, 2001). For the state and public, it may be more important whether the role of nonprofits is shrinking or not during the economic recession. For instance, the state could find that the nonprofit sector grows more even though their revenue fluctuates from the economic recession. As long as nonprofits play their role as the producers of social value, the state could make decisions on supporting the nonprofit sector to keep them producing social benefits.

To examine the factors that influence the size of the U.S. nonprofit sector during economic recessions, I test the following two hypotheses:

H1. The 2000–2002 economic crisis reduced the change in the number of nonprofits;

H2. The 2007–2008 Great Recession reduced the change in the number of nonprofits.

This will be accomplished by examining various studies that have focused on the impact of the economic crises on the nonprofit sector from the following four perspectives: nonprofit finance, nonprofit organization, state demographics, and state characteristics. Figure 5 illustrates the research framework.

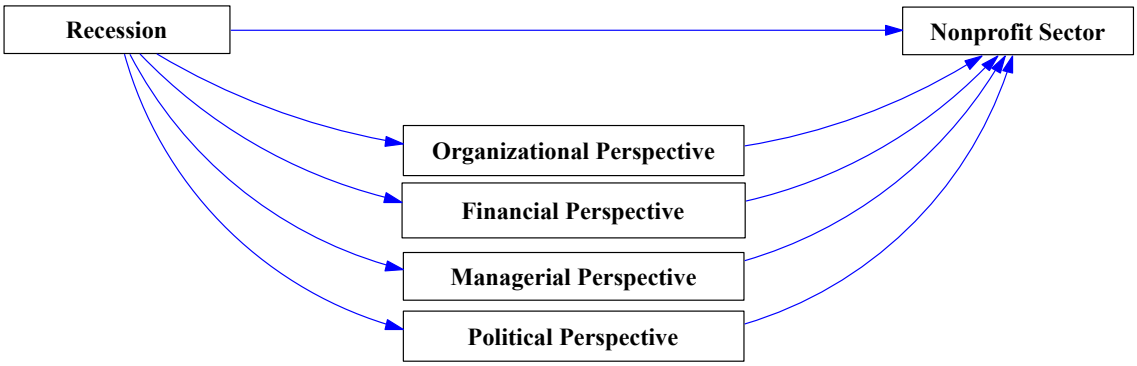

Figure 5. Research framework

To test Hypotheses 1 and 2, I explore factors affecting the growth rate of the number of nonprofits. The dependent variable of this model is the change in the number of nonprofits. Explanatory variables are classified into three different categories: state characteristics, nonprofit finance and organization, and state demographic characteristics. State characteristics include variables such as citizen ideology, government ideology, governing party, legislative control, and volunteer rate (Berry et al., 1998 & 2010). Nonprofit finance and organization includes variables such as average revenues, functional expenses, liabilities, and net assets. Demographic characteristics include state gross product, poverty rates, percentages of white and black population, percentages of the population over 65 years old, and college graduation rates (Bielefeld, 2000; Bielefeld et al., 1997).

Model Specification and Data

The present objective is to investigate the number of nonprofit organizations at the state level to clarify which state factors mitigate or intensify the influence of an economic recession on the nonprofit sector. To address this question empirically, a pooled ordinary least squares regression model is applied to analyze data from multiple

observations of 50 states over the period 2000–2012 The present study focuses on nonprofits that filed a Form 990 from 2000 to 2011 and reported gross receipts greater than or equal to $200,000 or total assets greater than or equal to $500,000 at the end of the tax year. Because the standards used to file Form 990 changed multiple times between 2000 and 2011, this study adopts the strictest standard (2010) for consistency. The data cleaning follows the rule suggested by Bowman, Tuckman, and Young (2012).

Empirical Results

Descriptive Findings

Table 16 provides the descriptive statistics for each variable used in the analysis. The total number of observations is 600, covering 50 states over 12 years from 2000 to 2011. Each state has 15,460 nonprofits on average. Each nonprofit earned on average around $71 million and spent around $66.2 million on functional expenses. An average of around 30% of a state's population tends to participate in volunteer activities, spending around 38 hours on average per year on these activities (Cooperation for National Community Service, 2015).

Table 16 Selective Descriptive statistics

Variables	Obs	Mean	Std. Dev.	Min	Max
Number of NPOs	600	15,460.17	17,458.98	750	88,700
Citizen ideology (Con→Lib)*	600	51.824	15.897	8.450	95.972
Volunteer rate (%)	600	0.300	0.066	0.085	0.558
Volunteer hour (hour)	600	38.543	14.168	0	137.400
Nonprofit Revenue (million$)	600	71.0	25.6	17.9	246.0
Nonprofit Functional Expense(million$)	600	66.2	23.1	16.0	141.0
Nonprofit Liability (million$)	600	59.3	36.4	10.6	258.0
Nonprofit Net Assets (million$)	600	81.5	36.7	29.0	273.0

* Citizen ideology was measured on a scale of 1 to 100, in which 1 represents an extremely conservative ideology, and 100 represents an extremely liberal ideology'.

Estimation Results

Model 1 in Table 17 shows that the 2000-2002 stock market downturn and the 2007-2008 financial crisis affected the number of nonprofit organizations slightly differently. First, the change in nonprofit size, measured by the number of nonprofits, decreased from 2003 to 2011 compared to 2000. The 2000–2002 economic crisis did not reduce the number of nonprofits immediately. However, the impact of the 2000–2002 economic crisis continued from 2003 to 2005. In 2003, the nonprofit size decreased around 32% from the previous year. Nonprofit size decreased slightly in 2004 and 2005, 5% and 4% respectively. On the other hand, during the 2007 Great Recession period, nonprofit size greatly decreased around 10% in 2007 but recovered quickly in 2008 and 2009. Nonprofit size increased around 1% in 2008 and 35% in 2009, compared to previous years. After the recession, the nonprofit size decreased again in 2010 and 2011, 6% and 7% respectively.

Models 2 and 3 also show similar trends with the full model. The 2000–2002 economic crisis did not immediately reduce the number of nonprofit organizations during the recession period in 2001 and 2002. Rather, nonprofit size was significantly reduced in 2003. The decrease in nonprofit size continued until 2005. On the other hand, the 2007–2008 Great Recession hit the nonprofit sector immediately in 2007 but the sector grew immediately in 2008 and 2009. Unlike the full model, Model 3 shows the increases in nonprofit size in 2010 and 2011 are not statistically significant.

In addition, Models 1, 2, and 3 consistently show that the influence of the economic crisis on nonprofit size can be mitigated in states with the following characteristics: more state spending, more liberal citizen ideology, higher volunteer rate,

lower volunteer hours, higher net asset of nonprofit organizations, higher state gross product, lower unemployment rate, and more white and age above 65 population.

Table 17 Economic Crisis and the Number of Nonprofit Organizations

Dependent Variable	Model 1 (Full)		Model 2 (2000−2005)		Model 3 (2006−2011)	
ln(Number of NPOs)	β	t	β	t	β	t
Year						
2001	−.073	−1.79	−.025	0.26		
2002	.026	0.02	.094*	2.74		
2003	−.295***	−7.77	−.232***	−0.26		
2004	−.347***	−9.33	−.287***	−1.97		
2005	−.385***	−9.97	−.328***	−1.97		
2006	−.373***	−10.15			−	−
2007	−.475***	−13.71			−.105**	−4.16
2008	−.469***	−15.01			−.097***	−6.97
2009	−.120*	−7.04			.141**	0.20
2010	−.182**	−7.53			.077	−0.05
2011	−.248***	−8.82			−.008	−1.39
State Characteristics						
ln(State spending)	.281***	7.77	.363***	7.00	.153**	3.74
Citizen ideology (Con→Lib)	.012***	12.63	.010***	6.34	.012***	10.50
Volunteer rate (%)	.795***	2.54	.837**	1.32	2.522***	2.29
Volunteer hour (hour)	−.005***	−5.90	−.004***		−.008***	−4.06
Nonprofit Finance ($2011)						
ln(Average revenue)	−.081	−0.40	.163	1.43	−.199	−0.81
ln(Average functional expense)	−.098	−0.71	−.304	−2.72	076	−0.01
ln(Average liability)	.044	1.28	−.075*	−0.65	−.084**	−0.12
ln(Average net asset)	.192***	3.26	.189***	−1.95	.162***	2.36
Demographic Characteristics						
State Gross Product (ln)[1]	.795***	14.60	.726***	7.36	.153**	12.48
Unemployment rate (%)[2]	−.054***	−6.94	−.085***	−7.32	−.037***	−5.24
Poverty rate (%)	.004	3.08	−.001	−0.04	.009	2.84
White population (%)	1.045***	14.43	.966***	9.86	.767***	10.29
Black population (%)	.215	0.54	.236		.379**	1.12
Age over 65 (%)	.538***	3.41	.450***	3.73	5.791***	3.22
College graduation rate (%)	.005	2.05	.006	1.27	.007	1.57
Constant	−6.623		−5.885		−6.970	
N	600		300		300	
P > *F*	.000		.000		.000	
R^2	.960		.969		.958	

*p < .10; **p < .05; ***p < .01

Note: Reference year 2000 for Model 1 & 2; Reference year 2006 for Model 3

[1] State Gross Product (SGP) ($million 2011)

[2] Extrapolation of the missing variable for 2000 and 2001 using backward forecasting with Moving Average 3 (MA3)

Discussion

This chapter investigates the impact of two major recessions on nonprofit size, occurring between the years 2000 and 2012: in the years 2000–2002 and 2007–2009. The 2000-2002 stock market downturn did not affect the nonprofit sector immediately, however, nonprofits continued to struggle after the recession period. One explanation could be that nonprofits took time to adjust to the domestic market changes to the growth of internet and information technology. Also, the continued domestic issues like September 11th attacks or stock market downturns could cause nonprofit size to continue decreasing.

On the other hand, the Great Recession in 2007 and 2008 did decrease the nonprofit size immediately in 2007, the largest drop in the 2000s. However, nonprofits recovered quickly in 2008 and 2009. The Great Recession in 2007 and 2008 was initiated by the mortgage-based bubble. This recession was related to the moral hazard of lending and exacerbated by the increased connectivity of global financial market. In that sense, the impact of the Great Recession in 2007 and 2008 was extremely large on the loan-based market, like real estate, securities, and stocks. The nonprofit sector immediately shrunk by the shocks of financial illiquidity in the market. The nonprofit sector grew more in 2008 and 2009 since the nonprofits usually do not rely on real estate assets. Also, nonprofits could provide more support for people who lost their housing during the Great Recession.

In addition to the impact of economic downturns, the state buffering effect could mitigate the decrease in nonprofit size. For instance, a high state volunteer rate increases nonprofit size significantly. According to Twombly (2003), the two main factors related

to the increase of nonprofit organizations are regional culture and organizational density. He found that nonprofit organizations in regions with more moralistic and traditional cultures have higher entry rates than those in regions with more individualistic cultures. The higher volunteer rate could reflect the more group-oriented and participatory culture, which can lead to an increase in nonprofit size. Lastly, the financial security of the state government and nonprofits affect the size of nonprofits according to nonprofit finance factors and state demographic factors.

The empirical results can contribute to the study of nonprofit market risk and explain the unique characteristics of the nonprofit sector in terms of responding to an economic crisis. For future research, individual organizational level data could be used for more precise and specific information instead of aggregated state analysis. Furthermore, it would be interesting to test whether different subsectors of nonprofit organizations react differently to an economic crisis.

Chapter Five. Conclusion, Policy Implications, and Future Directions

This dissertation, titled "Three Essays on Financial Collaboration in the Government and Nonprofit Sectors," aims to explore the internal and external financial risks that nonprofit organizations need to manage to sustain long-term growth. These topics are multidisciplinary studies that apply theoretical concepts from corporate finance, public administration, and management into nonprofit study. Nonprofit financial strategy and revenue management are important considerations as nonprofits have different financial perspectives than for-profit organizations.

First, it is necessary to apply advanced corporate finance strategies with caution as the nonprofit sector has increasingly competed with the private sector, which has used advanced finance and risk management strategies for many years. Chapter 2 investigates the impact of catastrophic revenue loss on the nonprofit sector and portfolio revenue strategy. The results indicate that portfolio revenue strategies decrease the chances of catastrophic revenue loss. For instance, nonprofits with revenue sets that have negative correlations among those revenue sources can theoretically reduce the probability of nonprofits losing their revenues in a worst-case scenario.

This result can contribute to the literature on nonprofit finance risk management by applying corporate finance theory-driven measurement to the nonprofit sector. It can also help nonprofit financial managers consider their revenue portfolio to reduce extreme revenue risk. The major feature of a well-developed portfolio is the correlation among the revenue sources; therefore, it is important to analyze the determinants of the correlations, ideally discussing the negative revenue correlations to minimize the portfolio variance, in

future research. Also, regarding value-at-risk, further study can explore why certain nonprofit subsectors are better at adjusting extreme revenue loss than others.

Second, even though government support is generally known to be a stable and secure source of revenue for nonprofits, underpayments or late payments can place nonprofits in financially difficult conditions. For these reasons, studying changes in government grants awarded to nonprofits can provide useful information. Additionally, as government grants are becoming a more significant part of nonprofits' revenues in terms of maintaining financial security and mission-oriented objectives, an exploration of the understudied topic of state and local government grants awarded to nonprofits is in demanded. Chapter 3 explores the state determinants that influence the amount of state and local government funding that is awarded to nonprofits. Results show that state government expenditures, and economic and demographic factors influence the state and local government contributions to nonprofits. For instance, nonprofits tend to receive more state and local government grants when they are located in states with fewer expenditures. This result implies that state governments utilize nonprofits as a supplementary provider of public services.

In addition, state and local governments make contributions to nonprofits when the state has more resources (e.g., lower unemployment rate) or higher demands (e.g., greater population over 65 years old). Nonprofits that have diversified revenue sources and higher membership income also tend to receive more state and local government grants. This result can contribute to the literature on the budgetary relationship between state governments and nonprofits as well as nonprofit revenue management. It also suggests that nonprofit managers may consider state characteristics in order to improve their

financial connections with state and local governments. State and local governments can also create the environments for utilizing nonprofits to supplement or complement the provision of state and local government services. It would be fruitful to pursue further research using more detailed, within-state information about government contributions to nonprofits. This further study can improve identification of the impact of state finance on the nonprofits.

Finally, the ability to successfully manage unexpected external shocks is crucial to the survival of the nonprofit sector. An examination of market risk management will be helpful to explain the unique characteristics of the nonprofit sector in terms of its response to an economic crisis. Chapter 4 studies the impact of economic recessions on nonprofits between the years 2000 and 2012, especially between 2000-2002 and 2007-2008. The 2000-2002 recession had a delayed impact, whereas the 2008-2009 recession had an immediate impact on the nonprofit sector. This result implies that the size of the nonprofit sector could respond differently depending on the change in markets. In addition, the impact of the economic crisis on nonprofit size can be mitigated or intensified, depending on the characteristics of the state and its nonprofits. This result can contribute to the literature on nonprofit risk management as well as reinforce the importance of a state's characteristics. For future study, the nonprofit size can be measured with the nonprofits' expenditures rather than the number of nonprofits. Nonprofit expenditures, however, can be driven by their revenue; it is important to carefully analyze the feedback loop between expenditures and revenue.

In sum, this dissertation holistically analyzes nonprofit internal and external financial management. To improve internal financial security, nonprofit organizations

can develop well-fitted revenue portfolios considering the interrelation among revenue sources. To improve external financial security, nonprofits can consider the political, economic, and demographic characteristics of their environments. Lastly, nonprofits may need to focus on the impact of economic change since their revenue streams can fluctuate depending on the changes in market.

Appendix A: Chapter 4 Economic Crisis and the Spending of the Nonprofit Organizations

Dependent Variable	Expense		Government Grant		Nongovernmental Grant		Program Service Revenue		Other Revenue	
	β	z	β	z	β	z	β	z	β	z
Year										
2002	−.007	−0.59	−.080	−1.37	.056	0.41	−.001	−0.10	−.116	−1.49
2003	.196***	11.57	.013	0.22	.088	0.60	.194 ***	9.48	.292 ***	3.59
2004	−.025**	−2.02	−.083	−1.38	.044	0.31	−.020	−1.26	−.096	−1.20
2005	−.019	−1.61	−.113*	−1.89	−.008	−0.06	−.024	−1.53	−.049	−0.61
2006	−.037***	−2.99	−.158***	−2.65	.030	0.21	−.037 **	−2.39	−.074	−0.94
2007	.078***	5.99	−.060	−0.97	−.054	−0.38	.056 ***	3.41	−.055	−0.67
2008	.089***	5.86	−.183	−0.32	−.069	−0.39	.072 ***	3.51	−.375 ***	−4.06
2009	−.117***	−6.24	−.183**	−2.59	−.077	−0.40	−.086 ***	−4.59	−.140	−1.54
2010	.019	1.10	−.140**	−1.97	.060	0.29	.039 **	2.05	−.083	−0.90
2011	−.054***	−3.07	−.211***	−2.94	−.031	−0.16	−.058 ***	−3.03	−.182*	−1.93
Nonprofit Finance ($2011)										
ln(Average functional expense)			.491*	1.83	−.714	−0.97	.301 ***	4.81	.243	0.65
ln(Average governmental grants)	.015***	2.66			−.021	−0.27	−.021 ***	−3.09	.025	0.65
ln(Average nongovernmental grants)	.003	0.15	−.120	−2.39			.051 *	1.71	−.100	−0.76
ln(Average program service revenue)	.116***	2.68	−.514**	0.28	.233	0.38			−.035	−0.11
ln(Average other revenue)	.013*	1.78	.010	−1.95	.086	0.99	.000	0.04		
Lagged dependent variable	.795***	16.66	.873***	32.29	.079**	2.07	.697 ***	15.77	.716***	
Nonprofit Organization										

Average number of employees	.000***	4.72	.001**	2.16	.001	1.30	.000***	3.90	.000	0.37
ln(Average liability) ($2011)					−.012	−0.16				
ln(Average net asset) ($2011)					−.147	−1.36				
Demographic Characteristics										
Population density (mi^2)	−.000	−0.44					−.000	−0.70	.000	0.10
Unemployment rate (%)	.004*	1.86			−.003	−0.15				
Poverty rate (%)	−.002**	−2.02					.002	1.52		
White population (%)	−.015	−0.68			.458*	1.84	−.007	−0.23		
Black population (%)	−.031	−0.66			−.059	−0.15	−.025	−0.56		
Age over 65 (%)	−.031	−0.80			−.068	−0.16	.013	0.27		
State Characteristics										
Citizen ideology (Con→Lib)			.001	1.13	.007***	3.08				
Government ideology			−.000	−0.16						
Governor party (Rep = 1)			.002	0.04						
Legislative control (Rep = 1)			−.023	−0.60						
ln(State spending) ($2011)			.046**	2.01						
State Gross Product (ln)[3]					.119**	2.47	−.002	−0.35	.015	0.61

[3] State Gross Product (SGP) ($million 2011)

Volunteer rate (%)			.692	1.14		
GINI			2.115	1.06		
Constant	1.133	3.246	20.745	−.515	1.196	

*p < .10; **p < .05; ***p < .01

Note: Reference year 2001; Lag year 2000

Using functional expenses as the size of nonprofits, the results shows that the influence of economic crisis can be mitigated in states with the following characteristics: more nonprofit organizations with government grants, program service revenue, and other revenue (rent income or investment income), higher unemployment rate, and a larger number of employees in the nonprofit organizations. Since revenue and expenses in the nonprofit sector simultaneously influence each other, this research applies the simultaneous analysis model with five equations.

$$Spending = Revenue + x$$

$$Revenue = Spending + y$$

where revenue = government grants + non-governmental grants + program service revenue + other revenue.

1. Spending = government grants + non-governmental grants + program service revenue + other revenue + x
2. Government grants = spending + y_1 + z_1 (non-governmental grants, program service revenue, other revenue)
3. Non-governmental grants = spending + y_2 + z_2 (government grants, program service revenue, other revenue)
4. Program service revenue = spending + y_3 + z_3 (government grants, non-governmental grants, other revenue)
5. Other revenue = spending + y_4 + z_4 (government grants, non-governmental grants, program revenue)

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Young, D. R. (2007). *Financing nonprofits: Putting theory into practice*. Lanham, MD: AltaMira Press of Rowman & Littlefield.

Young, D. R. (2012). Complementary, supplementary, or adversarial? Nonprofit-Government relations. In E. T. Boris & C. E. Steuerle (Eds.), *Nonprofits and Government: Collaboration and conflict* (pp. 37–80). Washington, D.C.: The Urban Institute Press.

Vita

SAERIM KIM

EDUCATION

2018 Doctor of Philosophy (Ph.D.) (Expected)
Mrtin School of Public Policy and Administration, University of Kentucky
Dissertation: *Three Essays on Financial Collaboration in the Government and Nonprofit Sectors*
Committee Members: Dwight Denison, J.S. Butler, Edward Jennings, and Merl Hackbart

2013 Master of Public Policy (MPP)
Andrew Young School of Policy Studies, Georgia State University
Major: Nonprofit Policy

2010 Master of Public Administration (MPA)
Sookmyung Women's University, Seoul, Korea
Thesis Title: The Study of Performance Measurement in Eco-Cities: Focusing on Environmental Performance Indicators

2009 Bachelor of Public Administration (B.A.)
Sookmyung Women's University, Seoul, Korea
Summa Cum Laude

FIELD OF INTERESTS

Public Budgeting and Financial Management, Nonprofit Fund Management, and Research Methods

RESEARCH GRANTS

[2] Acceptance and Use of Electronic Payments, The Council of State Governments 2017
Co–Principal Investigators: Dwight Denison and Saerim Kim
Research grant to develop a national report on the acceptance and distribution of electronic payments by state government

[1] Back On Track, United Way of the Bluegrass, Lexington, Kentucky 2015
Matching grant covering expenses for post-secondary education

AWARDS AND SCHOLARSHIPS

[16] Best Student Paper Award, Association for Research on Nonprofit Organizations and Voluntary Action (ARNOVA), November 2017
[15] Doctoral Fellowship I, Association for Research on Nonprofit Organizations and Voluntary Action (ARNOVA), November 2017
[14] Emerging Scholars Award, Association for Research on Nonprofit Organizations and Voluntary Action (ARNOVA), November 2016
[13] Tuition scholarships and graduate stipends, University of Kentucky, 2013–2016
[12] Graduate School Travel Grant, University of Kentucky, 2013–2016

[11] Daniel R. Reedy Quality Achievement Fellowship Award, University of Kentucky, 2013–2016
[10] Kentucky Opportunity Fellowship, University of Kentucky, 2013–2014
[9] Tuition scholarships and graduate stipends, Georgia State University, 2011–2013
[8] Pi Alpha Alpha, Honor Society for Public Affairs and Administration, Georgia, 2013
[7] Honorable Mention, Policy Case Competition, Georgia Institute of Technology, 2011
[6] Volunteer Excellence Award, International Conference of System Dynamics, Korea, 2011
[5] Alumni Scholarship for Graduate Students, Sookmyung Foundation, Seoul, Korea, 2010
[4] Early Graduation Excellence Award, Sookmyung Women's University, Seoul, Korea, 2009
[3] Dean's Student of the Year, Sookmyung Women's University, Seoul, Korea, 2009
[2] Merit-based scholarships, Sookmyung Women's University, Seoul, Korea, 2007–2009
[1] Nok-San Youth Democratic Citizen Leadership Award and Scholarship, Seoul, Korea, 2006

PUBLICATIONS

Manuscripts Under Review

[1] Kim, S. & Sullivan, A. Collaboration in Housing Services: The Continuum of Care Program and the Low-Income Housing Tax Credit.

Peer Reviewed Publications

[3] Jung, Y., Kim, S, & Lim, T. (2018) Risk Aversion and Sorting into Public Sector: Evidence from South Korea. *Korean Journal of Public Administration, 56*(1): 183–211.
[2] Denison, D. V. & Kim, S. (2018) Linking Practice and Classroom: Nonprofit Financial Management Curricula in MPA and MPP Programs. *Journal of Public Affairs Education*, 1–18.
[1] Kim, D., Hong, Y., & Kim, S. (2009). Sustainability of Transportation and System Thinking: Slowing Down the Rapidity of Total Entropy. *Korean System Dynamics Review, 10*(3): 5–23.

Working Papers (*Author order was determined alphabetically)

[5] Kim, S. Coping with Economic Crisis: The Buffering Capacity of a State for the Nonprofit Sector. (draft available)
[4] Kim, S. & Denison, D. V. Revenue Diversification and Downside Risk of Nonprofits: Applying Extreme Event Theory. (draft available)
[3] Kim, S. Determinants of State Government Grants to the Nonprofit Sector: Which States' Nonprofit Organizations Receive Government Grants? (draft available)
[2] Kim, S., Denison, D. V., & Middleton, D. Government Funding and Lobbying Expenditure of Charitable Nonprofits. (In preparation)
[1] *Kim, S. & Sullivan, A. The Impact of Nonprofit Geographic Density on Homeless Services and Outcomes. (draft available)

Non-Peer Reviewed Publications

[4] Poister, T. et al (2012). "2012 Employee Survey: Statewide Result." Georgia Department of Transportation & Georgia State University Department of Public Administration and Urban Studies.
[3] Kim, D., Hong, Y., & Kim, S. (2011). The Limits of the Material World. In Korea System Dynamics Society and the Seoul Club Research Institute (Eds.), *Beyond Broadcasting and Communication Convergence: A Challenge to a Green Planet and Converging Responses* (pp. 20–45). Seoul: Sunhaksa.
[2] Kim, D., Hong, Y., & Kim, S. (2010). An Analysis of the Scenario for Future IT Structure Development in the United States. In Korea System Dynamics Society and the Seoul Club Research Institute (Eds.), *Study of Causal Loop and Simulation of Application and Future Information Telecommunication in the Unites States*. Seoul: Electronics and Telecommunications Research Institute (ETRI).

[1] Kim, D., Hong, Y., & Kim, S. (2009). Diagnostic Research for the National Crisis in Low Carbon and Green Growth Generation. In Korea System Dynamics Society and the Seoul Club Research Institute (Eds.), *Low Carbon Green Growth and IT 2030 Policy Design Study*. Seoul: Electronics and Telecommunications Research Institute (ETRI).

Papers Presented at Academic Conferences

[12] "Homelessness and Federally Subsidized Housing: The Continuum of Care Program and the Low Income Housing Tax Credit" *Urban Affairs Association (UAA)*, Toronto, Canada, April 2018

[11] "The Effect of Grant Recipient Density on Homeless Services and Outcomes" *American Society for Public Administration (ASPA)*, Denver, March 2018

[10] "Revenue Diversification and Downside Risk of Nonprofits: Applying Extreme Event Theory" *Association for Research on Nonprofit Organizations and Voluntary Action (ARNOVA),* Michigan, November 2017

[9] "Revenue Diversification and Downside Risk of Nonprofits: Applying Extreme Event Theory" *Association for Public Policy Analysis and Management (APPAM),* Chicago, November 2017

[8] "Revenue Diversification and Downside Risk of Nonprofits: Applying Extreme Event Theory" *Association for Budgeting and Financial Management (ABFM),* Washington, D.C., September 2017

[7] "The Influence of Budgetary Size on State and Federal Government Grant Contributions between 2000 and 2011" *Association for Research on Nonprofit Organizations and Voluntary Action (ARNOVA),* Washington, D.C., November 2016.

[6] "Determinants of Government Grants for the Nonprofit Sector: Which States' Nonprofit Organizations Receive Government Grants?" *Association for Public Policy Analysis and Management (APPAM),* Washington, D.C., November 2016.

[5] "Determinants of Government Grants for the Nonprofit Sector: Which States' Nonprofit Organizations Receive Government Grants?" *Association for Budgeting and Financial Management (ABFM),* Seattle, WA, October 2016.

[4] "Public Management Meets Public Economics: An Empirical Investigation of the Relationship between Government Performance, Citizen Satisfaction, and Property Values." *Public Management Research Association (PMRC),* Aarhus, Denmark, June 2016.
Coauthors: Cole Rakow and Jueyoung Mok.

[3] "Economic Crises and the Responses of Nonprofit Organizations." *American Society for Public Administration (ASPA)*, Seattle, WA, March 2016.
Coauthor: Changguen Yun.

[2] "State Politics and Government Grants for Nonprofit Organizations in the United States." *Midwest Political Science Association (MPSA)*, Chicago, IL, April 2015.

[1] "Elements of Successful Performance Measurement in the Nonprofit Area: A Multiple Regression Analysis of Nonprofit Performance in the United States." *Southeastern Conference for Public Administration (SECoPA)*, Fort Lauderdale, FL, 2012.

MEMBERSHIPS AND AFFILIATIONS

[5] Urban Affairs Association (UAA)
[4] Association for Public Policy Analysis and Management (APPAM)
[3] Association of Budgeting and Financial Management (ABFM)
[2] Association for Research on Nonprofit Organizations and Voluntary Action (ARNOVA)
[1] American Society for Public Administration (ASPA)

CAMPUS AND COMMUNITY INVOLVEMENT

[7] Graduate Student Board, Quantitative Initiative for Policy and Social Research, University of Kentucky, 2014–2018

[6] Nonprofit Leadership Alliance, Alliance Management/Leadership Institute, Georgia, 2011–2013
[5] National Certified Nonprofit Professional, Nonprofit Leadership Alliance, Georgia, 2013
[4] Grant Writer, Christian Aid Society, Georgia, 2012–2013
[3] Vice President, Korea Graduate Association, Georgia State University, Georgia, 2012–2013
[2] Debater, 6th International Symposium, Kyushu University, Fukuoka, Japan, "East Asia through the Strait between Japan and Korea," 2009
[1] Korea-China Youth Leader, Korea Government Youth Commission, Seoul, Korea and Beijing, China, 2009

ADDITIONAL SKILLS

Quantitative Analysis	Stata, Statistical Package for the Social Sciences, Geographic Information System (GIS)
Qualitative Analysis	NVivo
System Dynamics	Vensim, Stella
Social Network Analysis	UCINET (2016 LINKS Center Network Analysis Workshop)
Languages	Korean (native), English (advanced), Chinese & Japanese (basic)