Event risk: three essays exploring nonprofit organizations' finances after the September 11 attacks

Santiago Guerrero

University at Albany, State University of New York, sangue20@yahoo.com

The University at Albany community has made this article openly available. Please share how this access benefits you.

Follow this and additional works at: https://scholarsarchive.library.albany.edu/legacy-etd

Part of the Business Administration, Management, and Operations Commons, and the Finance and Financial Management Commons

Recommended Citation
https://scholarsarchive.library.albany.edu/legacy-etd/1621

This Dissertation is brought to you for free and open access by the The Graduate School at Scholars Archive. It has been accepted for inclusion in Legacy Theses & Dissertations (2009 - 2024) by an authorized administrator of Scholars Archive. Please see Terms of Use. For more information, please contact scholarsarchive@albany.edu.
EVENT RISK: THREE ESSAYS EXPLORING
NONPROFIT ORGANIZATIONS’ FINANCES
AFTER THE SEPTEMBER 11 ATTACKS

by

Santiago Guerrero

A Dissertation
Submitted to the University at Albany, State University of New York
In Partial Fulfillment of
the requirements for the Degree of
Doctor of Philosophy

Rockefeller College of Public Affairs and Policy
Department of Public Administration and Policy
2016
EVENT RISK: THREE ESSAYS EXPLORING
NONPROFIT ORGANIZATIONS’ FINANCES
AFTER THE SEPTEMBER 11 ATTACKS

by

Santiago Guerrero

COPYRIGHT 2016
Abstract

The three essays of this dissertation explore the experience of nonprofit organizations after the September 11 attacks to gain a better understanding of one specific type of risk nonprofit organizations face—“event risk”—which I broadly define as the risk of a negative impact on the operations of a nonprofit organization as a result of unexpected events. Essay One finds that overall nonprofit sector revenues were not reduced after the September 11 attacks and identifies characteristics of the revenue mix that make nonprofit organizations less susceptible to event risk. Essay Two identifies characteristics of nonprofit organizations’ financial conditions that can mitigate the impact of event risk on program/service delivery. Essay Three finds that few nonprofit organizations in New York State opted to merge following the attacks and were unsuccessful realizing the potential financial benefits of merging. The overall findings provide support to the nonprofit financial vulnerability theory and the benefits theory of nonprofit finance—two theories the nonprofit finance literature can call its own—and suggest that the nonprofit sector as a whole is resilient to unexpected events. The results also suggest that, depending on the subsector in which the nonprofit organization operates, nonprofit managers can benefit from different strategies to face event risk.
Acknowledgements

When I first came from my hometown of Bogotá, Colombia to Albany, NY in January, 2007 to pursue an MPA in Public Administration, little did I know that ten years later I would be established in the United States, happily married, and finishing a Ph.D. I have learned and grown so much during these years while going through this fulfilling and painful process. I have so many people to thank.

I feel blessed to have had such an extraordinary committee. I am enormously grateful for their time and dedication guiding me through every step of the dissertation. I would like to start by thanking Dr. Robert Purtell, my advisor/co-chair and one of the first professors I met when I first arrived to Albany. Ever since I took the first Government and Nonprofit Financial Management course with him I have admired his expertise, judgement, humor, and dedication to his students. He has been a guide for my academic and professional career and I will always be grateful to him.

Many thanks also to Dr. David Matkin, co-chair of my committee, for his patience and for always me pushing me to consider alternatives to improve my work. I am also so thankful to Dr. Thad Calabrese, whose expertise in nonprofit finance was invaluable for this process and whose words of encouragement at every ARNOVA conference kept me going.

Thanks to my dear friends Eunhyoung Kim and Marcelo Marchesini da Costa, who provided valuable feedback on different drafts of this dissertation and, most importantly, were always there to make me smile when I needed them the most. Many thanks to other countless
professors, friends, and colleagues that I have met throughout my tenure at the Rockefeller College and who have made this experience much more enjoyable and enriching.

As I write these acknowledgements, I honor the memory of Steve Jackson and Dr. Dennis Smith, two good friends and colleagues whom I met as a doctoral student and I will always miss.

My infinite gratitude and love to my wife and editor-in-chief, Amy, whose care and unconditional support made this achievement possible. My parents, Fernando and Clara, thanks for being such good role models and always being there for me. My brothers, Alejandro and Felipe, thank you for always cheering for me.

November 13, 2016
Albany, NY
Table of Contents

Chapter 1: Background and Introduction to Essays ................................................................. 1
  1.1. Introduction .................................................................................................................. 1
  1.2. Nonprofit Risk ............................................................................................................ 3
  1.3. September 11 and the Nonprofit Sector ................................................................. 5
  1.4. Dissertation Essays ................................................................................................. 7
  1.5. Justification ................................................................................................................ 9
    1.5.1. Management Justification: Importance of Nonprofit Finances ...................... 10
    1.5.2. Policy Justification: Health of the Nonprofit Sector ........................................ 12
  1.6. Limitations ................................................................................................................ 14
  1.7. Organization of the Dissertation .............................................................................. 15
  1.8. References ................................................................................................................ 16

Chapter 2: Nonprofit Organizations’ Revenues after September 11: An Application of the Benefits Theory of Nonprofit Finance ................................................................. 21
  2.1 Introduction .................................................................................................................. 21
  2.2. Research on September 11 and the Nonprofit Sector ............................................. 22
    2.2.1. Philanthropic Response to September 11 and Challenges of the Nonprofit Sector ... 23
    2.2.2. September 11 Impact on Nonprofit Organizations ........................................ 25
  2.3. Nonprofit Revenues ................................................................................................. 27
    2.3.1. Sources of Nonprofit Organizations’ Revenue ............................................... 28
  2.4. Nonprofit Revenue Mix ............................................................................................ 33
    2.4.1. Revenue Diversification ..................................................................................... 34
    2.4.2. Revenue Concentration .................................................................................... 39
    2.4.3. Portfolio Approach ............................................................................................ 40
    2.4.4. Benefits Theory of Nonprofit Finance .......................................................... 41
    2.4.5. Other Factors Affecting Revenues .................................................................... 44
  2.5. Data ............................................................................................................................. 45
  2.6. Method ......................................................................................................................... 51
    2.6.1. Stage 1: Standard Abnormal Revenue and Determining its Significance .......... 52
    2.6.2 Stage 2: Revenue Mix and Standardized Abnormal Revenue ............................. 55
2.7. Significance of the change in nonprofit revenues after the September 11 Attacks…….. 56
2.8. Nonprofit Revenue Mix and Event Risk .................................................................. 60
2.9. Results .................................................................................................................. 65
2.10. Discussion .......................................................................................................... 73
2.11. Limitations ......................................................................................................... 76
2.12. Conclusion .......................................................................................................... 78
2.13 References ............................................................................................................ 80

Chapter 3: Avoiding Service Cutbacks in Times of Crisis: Nonprofit Financial Vulnerability
Following September 11 ............................................................................................. 88
  3.1. Introduction .......................................................................................................... 88
  3.2. What is Nonprofit Financial Vulnerability? ......................................................... 90
  3.3. Determinants of Nonprofit Financial Vulnerability ............................................ 95
      3.3.1. Use Current Revenues ................................................................................. 96
      3.3.2. Use Unrestricted Net Assets ...................................................................... 97
      3.3.3. Increase Operational Efficiency ................................................................. 99
      3.3.4. Borrowing .................................................................................................. 101
      3.3.5. Other Organizational Characteristics ......................................................... 103
  3.4. Data .................................................................................................................... 104
  3.5 Method .................................................................................................................. 107
      3.5.1. Dependent Variables .................................................................................. 109
      3.5.2. Independent Variables .............................................................................. 110
      3.5.3. Summary of Hypotheses, Operationalization, and Independent Variables ... 113
  3.6. Results and Discussion ....................................................................................... 115
  3.7. Robustness Tests ............................................................................................... 122
  3.8. Limitations .......................................................................................................... 127
  3.9. Conclusions ........................................................................................................ 127
  3.10. References ....................................................................................................... 130

  4.1. Introduction ........................................................................................................ 135
  4.2. What is a Merger? .............................................................................................. 139
4.3. Mergers in the For-Profit Sector ................................................................. 140
4.4. Resource Dependence Theory and Mergers ................................................ 143
4.5. Mergers in the Nonprofit Sector ................................................................. 146
  4.5.1. Merger Process ............................................................................. 146
  4.5.2. Risks of Nonprofit Mergers ............................................................ 151
  4.5.3. Potential Financial Benefits of Nonprofit Mergers ......................... 153
4.6. Data .......................................................................................................... 155
4.7. Methodology ............................................................................................. 159
  4.7.1. Independent Variables .................................................................... 160
  4.7.2. Dependent Variables ....................................................................... 160
  4.7.3. Hypotheses Testing ......................................................................... 164
4.8. Results and Discussion ............................................................................ 167
4.9. Limitations ............................................................................................... 173
4.10. Robustness Test ..................................................................................... 176
4.11. Conclusion ............................................................................................. 176
4.12. References .............................................................................................. 177

Chapter 5: Overall Conclusions .................................................................... 184
  5.1. Implications for Theory ......................................................................... 184
  5.2. Implications for Management ................................................................. 187
  5.3. Implications for Policy ................................................................. 189
  5.4. Implications for Research ................................................................. 191
  5.5. References ........................................................................................... 193
List of Tables

Table 1.1. Size and Financial Scope of Public Charities .......................................................... 6
Table 2.1. Data Cleaning Steps and Sample ............................................................................ 49
Table 2.2. Distribution of Sample by Broad Nonprofit Subsectors ......................................... 50
Figure 2.1. Geographic Distribution of Nonprofit Organizations in Sample .......................... 51
Figure 2.2. Standardized Abnormal Revenues 2002, 2003, and 2002-2003 Mean .................. 57
Table 2.3. Percentage of Nonprofit Organizations with Statistically Significant Revenue Changes ....................................................................................................................... 58
Figure 2.3. Standardized Abnormal Revenues by Subsector .................................................. 59
Table 2.4. ACSAR by Subsector ............................................................................................... 60
Table 2.5. Donative Index by Broad NTEE Subsectors ............................................................ 64
Table 2.6. Summary Descriptive Statistics ............................................................................... 65
Table 2.7. Correlation Matrix .................................................................................................. 66
Table 2.8. Fixed Effects, Random Effects, and Pooled OLS .................................................... 67
Table 2.9. Fixed Effects Regression by Broad Subsector ......................................................... 70
Table 2.10. Fixed Effects Regression by Broad Subsector (no HHI) ...................................... 72
Table 2.11. Definitions of Financial Vulnerability ..................................................................... 94
Figure 3.1. Financial Vulnerability Theory .............................................................................. 96
Table 3.1. Data Cleaning Steps and Sample .......................................................................... 105
Table 3.2. Sample by Subsector and Fiscal Year .................................................................... 106
Figure 3.2. Geographic Distribution of Nonprofit Organizations in Sample ......................... 107
Table 3.3. Operationalization of Determinants and Expected Results ................................... 113
Table 3.4. Summary Descriptive Statistics .............................................................................. 114
Table 3.5. Correlation matrix ................................................................................................. 115
Table 3.6. Determinants of Nonprofit Financial Vulnerability Fixed Effects and Random Effects .......................................................................................................................... 116
Table 3.7. Fixed Effects Regression Determinants of Financial Vulnerability by Subsector .... 118
Table 3.8. Summary of Regression Results .............................................................................. 122
Table 3.9. Summary of Dependent Variables ....................................................................... 124
Table 3.10. Logistic Regression of Determinants of Nonprofit Financial Vulnerability (odds ratios) ....................................................................................................................... 126
Table 4.1. Construction of Mergers Sample .................................................................................. 157
Table 4.2. Mergers Sample by Subsector .................................................................................. 158
Table 4.3. Summary of Hypotheses and Operational Definitions .............................................. 165
Table 4.4. Summary of Descriptive Statistics ........................................................................... 166
Table 4.5. Correlation Matrix .................................................................................................. 167
Table 4.6. Total Revenues, Expenses, Assets, and Net Assets Before and After Merger ......... 168
Table 4.7. Descriptive Statistics of Dependent variables Before and After Merger............... 169
Table 4.8. Number of Organizations that Experienced Hypothesized Changes ....................... 171
Table 4.9. Fixed Effects Model Financial Outcomes of Mergers ............................................. 172
Table 5.1. Management Implications Summary: Which strategies Work for Each Subsector? 188
Chapter 1: Background and Introduction to Essays

1.1. Introduction

“A struggle is under way at the present time for the ‘soul’ of America’s nonprofit sector, that vast collection of private, tax-exempt hospitals, higher education institutions, day care centers, nursing homes, symphonies, social service agencies, environmental organizations, civil rights organizations, and dozens of others that make up this important, but poorly understood, component of American life. This is not a wholly new struggle, to be sure.” (Salamon, 2012)

The quote above refers to the struggle of organizations in the nonprofit sector caused primarily by the financial crisis of 2008-2009. However, as Salamon points out, this was not a “wholly new struggle.” It was not even the first struggle of the 21st century (Salamon, 2012). The turn of the millennium is widely considered a time of fiscal distress for nonprofit organizations in the United States (Lane, 2006; Salamon, 2012; Young, 2006). In particular, the September 11, 2001 events are considered “defining events for our era that not only caused immediate tremors and dislocations but which also set in motion long-term shock waves, which the nonprofit sector will be dealing with for many years” (Young, 2006, p. 15).

The three essays of this dissertation explore how an unexpected and devastating event such as September 11 can affect the finances of nonprofit organizations and how those who manage nonprofit organizations act in response to the financial shock (if any) experienced after unexpected events. While September 11 is a unique event, other events can potentially impact the nonprofit sector in similar ways. For example, national and international natural disasters such as Hurricane Katrina, Hurricane Sandy, the 2004 Indonesian tsunami, or the 2015 Nepalese earthquake have the potential of affecting the nonprofit sector in similar ways by shifting donation patterns and increasing the demands for the goods and services that nonprofit organizations provide. Other events that may not have clearly identifiable start and end dates can also affect the nonprofit sector...
in comparable ways due to their impact on the economy. For example, several reports have stated that non-profit organizations’ finances were notably affected by the “Great Recession” of 2007. News articles referenced a number of nonprofit managers worried about facing tough times after the recession (Strom, 2010) and their agencies’ struggles with fewer donations (Protess & Roose, 2011). Additionally, a report from the symposium on Finances of Nonprofits & Public Policy stated that nonprofit scholars, practitioners, policymakers and regulators agree that, after the recession, nonprofit organizations have “confront[ed] difficulties more severe than any seen for decades” (Jeavons, 2011, p. i). For this reason, the study of how nonprofit organizations’ finances were affected after September 11 and how nonprofit organizations that experienced reductions in their revenues reacted to such disruptions becomes a relevant topic as nonprofits are likely continue to face similar challenges.

This dissertation examines the experience of nonprofit organizations after September 11 to gain a better understanding of one specific type of risk nonprofit organizations face— “event risk” — which I broadly define as the risk of a negative impact on the operations of a nonprofit organization as a result of unexpected events. The three essays in this dissertation aim to advance knowledge about event risk, and nonprofit risk in general, by exploring questions such as:

(1) How were the revenues of nonprofit organizations affected after the September 11 attacks? What characteristics of revenue structure make nonprofit organizations more susceptible to event risk?

(2) How were the operations of nonprofit organizations that experienced revenue reductions affected? What characteristics of the financial condition of a nonprofit organization were more important for mitigating the impact of event risk on service/program delivery?
(3) Did the number of nonprofit mergers increase during the two years following the September 11 attacks? Are nonprofit mergers a feasible option for nonprofit organizations to mitigate the impact of event risk?

1.2. Nonprofit Risk

Risk is defined in Webster’s Dictionary as “the possibility that something bad or unpleasant will happen” (risk, n.d.). From the perspective of an organization, the definition of risk is more precise and specifically refers to the possibility that outcomes of the organization are different from what is expected (Herman, Head, Jackson, & Fogarty, 2004). While risk can refer to both the possibility that the outcomes are better or worse than the expectation, the focus of this dissertation is on the downside risk which is the risk that the outcome is worse than expected and can negatively affect an organization. Financial risk is the risk that financial problems will not allow a nonprofit organization from meeting its expected objectives (Trussel & Greenlee, 2001). Event risk is a particular type of financial risk in which the financial problems are triggered by unexpected events.

Event risk is a concept commonly used in corporate finance literature where it is defined as the “the risk of a major event precipitating a sudden large shock to security prices and volatility” (Liu, Longstaff, & Pan, 2003, p. 231). From a corporate finance perspective, the emphasis is on the effect of an unexpected event on the value of the firm. That is, corporate finance event risk literature emphasizes determining whether there are significant changes in the value of firms after particular events. In this dissertation, I rely on an analogous definition of event risk, one that is tailored to the nonprofit sector and emphasizes the organization achieving its mission rather than just the financial consequences of the event on the organization. In this respect, I start by examining the impact of an unexpected event on the finances of a nonprofit organization, and take the analysis a step further to explore the organization’s response to such an impact.
Besides event risk, there are different situations that affect nonprofit organizations’ finances and nonprofit literature has identified circumstances that are more risky for nonprofit organizations (Young, 2009). In general, nonprofit organizations face several types of risks that go beyond event risk. Examples of other types of risks are reputational risk, volunteer risk, credit risk, market risk, and regulatory risk, among many others (Grace, 2010; Matan & Hartnett, 2011; Young, 2009). What all these risks have in common is that they can potentially impact the finances of a nonprofit organization and prevent it from meeting its objectives.

There is no absolute distinction between these different types of risks and they often overlap and are interrelated (Grace, 2010). For example, event risk and market risk overlap because organizations that rely on investment income are likely to experience higher market risks after the occurrence of an unforeseen event that affects the market. All of the types of risks, individually or combined, affect the finances of nonprofit organizations in different ways and can prevent them from pursuing their missions. Those in charge of nonprofit organizations face the challenge of managing all these types of risk so that the organization can more effectively and efficiently pursue its mission. (Herman et al., 2004).

The three essays in this dissertation explore how nonprofit organizations experience and deal with event risk. Although exploratory, the findings of this dissertation are meant to contribute to the development of a general theory of nonprofit risk that includes event risk. A general theory of nonprofit risk should take into consideration how nonprofit organizations are affected and respond to external and unexpected events, and the essays included in this dissertation are steps in this direction. This line of research is aimed to help managers and those who control nonprofit organizations to understand the risks nonprofit organizations face and design strategies for managing them. It is also meant to guide policy makers to implement policies that can reduce the
risks nonprofit organizations face. Finally, the results of this study can help donors and grantors identify organizations less likely to fail and pursue their mission despite unfavorable financial conditions.

1.3. September 11 and the Nonprofit Sector

The September 11 attacks affected the nonprofit sector in different ways. For example, organizations in Lower Manhattan were directly impacted due to their proximity to the site of the terrorist attacks. Some organizations had to close offices in the short term because their offices were physically damaged (Derryck & Abzug, 2002). Other organizations in New York City were affected because the demand for their services decreased as many people were afraid to leave their homes.

The impact of the September 11 attacks was not only felt in New York City and Washington DC where the planes crashed; it is alleged that they affected the nonprofit sector in general. While donations towards relief efforts increased, other nonprofit organizations experienced declines in donations as people diverted donations towards relief efforts (Lane, 2006; Yurenka, 2007). Similarly, the war on terrorism has resulted in increases in defense expenditures and decreases in social program spending (Derryck & Abzug, 2002). In addition to the shifts in funding, some claim that the economic downturn that followed the terrorist attacks resulted in reduced individual and corporate giving to nonprofit organizations (Renz, 2002, 2003), overall declines of government funding (Lane, 2006), and also significantly affected nonprofit organizations that rely on investment income (Guerrero & Purtell, 2011).

Despite the difficulties, the nonprofit sector in the United States showed signs of vitality after 2001. The sector has steadily grown in terms of number of organizations, revenues and expenses.
The Nonprofit Almanac shows that between 1999 and 2004 the number of public charities registered with the IRS increased by 30.9 percent from 645,926 to 845,233 organizations. Total revenues for all public charities were estimated at $1.05 trillion in 2004, a 21.4 percent increase from 1999 after adjusting for inflation. This is around 7 percent higher than the growth of the GDP in the United States for the same period. The growth in expenses was even greater as nonprofits’ total expenses were $981 billion in 2004, or 24 percent higher than 1999 after adjusting for inflation (Pollak, 2007). The table below shows the growth of the nonprofit sector from 1999 to 2004 in terms of number of public charities, revenues, expenses, and assets.

Table 1.1. Size and Financial Scope of Public Charities

<table>
<thead>
<tr>
<th></th>
<th>1999</th>
<th>2004</th>
<th>% Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>Public Charities</td>
<td>645,926</td>
<td>845,233</td>
<td>30.9%</td>
</tr>
<tr>
<td>Reporting Public Charities</td>
<td>243,612</td>
<td>299,033</td>
<td>22.7%</td>
</tr>
<tr>
<td>Revenues (billion $)</td>
<td>865</td>
<td>1,050</td>
<td>21.4%</td>
</tr>
<tr>
<td>Expenses (billion $)</td>
<td>791</td>
<td>981</td>
<td>24.0%</td>
</tr>
<tr>
<td>Assets (billion $)</td>
<td>1,509</td>
<td>1,819</td>
<td>20.5%</td>
</tr>
</tbody>
</table>

Source: NCCS Data; All monetary figures adjusted to 2004 constant dollars

How did the nonprofit sector manage to keep growing despite the September 11 attacks and the economic downturn? Aggregate statistics of the nonprofit sector mask the fact that not all nonprofits had the same experiences. While some nonprofits indeed struggled, others found ways to thrive despite the unfavorable economic contexts (Young, 2007).

For example, aggregate revenue and expense statistics by major subsectors suggest that different subsectors experienced dissimilar revenue changes after the attacks. While the revenue increase between 1999 and 2004 for subsectors such as human services and health was around 40%, other subsectors such as arts grew at a much lower rate. For this reason, the analyses
included in the essays of this dissertation place special attention on the differences between subsectors.

1.4. Dissertation Essays

The three essays in this dissertation explore factors that explain why some nonprofit organizations thrived while others withered when facing an unforeseen event that posed a risk to the organization. They focus on the experience of nonprofit organizations after the September 11 attacks. Each essay examines a different perspective of the question of how individual nonprofits faced difficult times after the September 11 attacks. Together they contribute to our understanding of event risk and broaden our understanding of the risks nonprofit organizations face. Developing our understanding of the way nonprofit organizations face financial challenges may help researchers, donors, and managers develop successful strategies that can be implemented by nonprofit organizations as they continue to face financial stress.

The first essay examines the revenues of nonprofit organizations in the United States in the two years that followed the September 11 attacks. It identifies nonprofit organizations that experienced revenue disruptions after the attacks and explores revenue portfolio characteristics that explain why revenues of some organizations were more/less stable. The essay starts by assessing whether the revenues of nonprofit organizations were significantly affected after the September 11 attacks and determining if nonprofits in particular subsectors experienced more or less significant revenue disruptions. Then it examines the relationship between the revenue structure of nonprofit organizations and the changes in revenues after the September 11 attacks. The results of the empirical analyses presented in this essay suggest that the revenue structure of nonprofit organizations in the different subsectors can help explain the revenue changes experienced by nonprofit organizations after an unexpected event.
The second essay takes a step further and studies the relationship between nonprofit organizations’ reductions in revenue and changes in expenses. While some nonprofit organizations experienced statistically significant reductions in their revenues after the September 11 attacks, these reductions are only significant from a managerial point of view if they lead to reduction in the level of program/service delivery. The essay assesses the response of nonprofit organizations that experienced revenue reductions after the September 11 attacks and asks whether the financial condition of organizations’ can explain whether management decides to cut back on the level of service delivery after experiencing a revenue reduction due to an unexpected event. The essay relies on the nonprofit financial vulnerability theory originally developed by Tuckman and Chang (Tuckman & Chang, 1991) to test whether certain characteristics of nonprofit organizations’ financial condition (e.g. net asset balances, operating margins, program expense ratio) are related to the likelihood of the organization cutting back its services after experiencing a financial shock. The results of the empirical analyses performed for this essay provide support to the financial vulnerability theory as organizations with higher operating margins, more net asset reserves, higher administrative expenses, and lower debt ratios were less likely to cut back on expenses after experiencing revenue reductions.

Finally, the third essay focuses on nonprofit organizations in New York State that merged after the September 11 attacks and assesses the financial benefits that nonprofit organizations can realize by merging. The essay starts by examining whether the number of nonprofit mergers increased following the September 11 attacks. Nonprofit organizations struggling financially have the option of merging as a way to overcome difficulties and this essay examines whether more nonprofit organizations opted to merge following the September 11 attacks as a response to financial struggles. While all mergers are not necessarily the response to a condition of financial difficulties,
mergers in the nonprofit sector too often occur as a response from organizations struggling to survive that see the merger as their only option for survival (Golensky & DeRuiter, 2002; Jenkins, 2000). The essay also evaluates the effectiveness of mergers as a response to financial risks faced by nonprofit organizations. In particular, it tests whether nonprofit organizations that opted to merge during a period of two years following the September 11 attacks realized any of the financial benefits expected from merging. The empirical analyses presented in this essay suggest that nonprofit mergers did not generally realize the financial benefits expected from the merger. That is, the mergers failed to result in increased operational efficiency, increased revenue diversification, better operating margins and faster rates of growth.

1.5. Justification

Advancing the research on nonprofit event risk is relevant from a management and policy perspective. From a management perspective, this research is valuable for those managing nonprofit organizations to understand how unanticipated events can affect the organizations they manage and what can be done to lessen any negative impact. From a policy perspective, governments are invested in the health of the nonprofit sector because, as of 2012, the nonprofit sector accounted for around 11.4 million jobs or around 10.3 percent of total U.S. private sector employment (U.S Bureau of Labor Statistics, 2014) and because nonprofit organizations provide public goods and services lessening the burden of government (Hall & Reed, 1998). Nonprofit organizations are service providers for governments and should be prepared to face risky events that can lead to the interruption of key public services. Overall, a better understanding of how unexpected events can have a negative impact on the operations of nonprofit organizations is relevant from both a management and policy perspective so that managers are better equipped to deal with these events and policy makers can design strategies to help minimize the impact of
unexpected events on the nonprofit sector or better manage the aftermath of these types of events. The following two subsections expand on the management and policy justifications of the study of the impact that unexpected events such as the September 11 attacks can have on the nonprofit sector.

1.5.1. Management Justification: Importance of Nonprofit Finances

The nonprofit sector is comprised of organizations that are generally exempt from taxation because they serve a public purpose. Referring to these organizations as “nonprofit organizations” doesn’t precisely define the sector because they are not actually banned from earning profits (Salamon, 2003). Instead, nonprofit organizations are largely characterized by what Hansmann refers to as the “non-distribution constraint” (Hansmann, 1981) which means that nonprofit organizations are barred from distributing profits among the people that control them. Unlike for-profit organizations, the primary focus of nonprofit organizations is not earning profits but achieving the public purpose or mission for which they were created.

Although the focus of nonprofit organizations is to achieve a mission rather than to earn profits, this doesn’t mean that nonprofit organizations shouldn’t earn profits or that their finances are less important. The popular saying “no margin, no mission” credited to Sister Irene Kraus from the Daughters of Charity National Health System (Kinzbrunner, 2002) clearly expresses the necessity of nonprofit organizations to care about their finances in order to achieve their mission. This particularity of the nonprofit sector is what commonly is referred to as the “double bottom line” of nonprofit organizations. Nonprofit organizations have to care about two different but complimentary bottom lines: the mission bottom line and the financial bottom line (McLaughlin, 2009). Even though both bottom lines are of great importance, nonprofit managers may be more attuned to managing their mission than managing finances and often underestimate the importance
of financial management for achieving their mission. Nonprofit organizations are charged with the challenging task of balancing their need to maintain an adequate financial condition while pursuing the organizational mission and maintaining consistent and quality programs over time (Sontag-Padilla, Staplefoote, & Gonzalez Morganti, 2012).

While the fundamental reason why for-profit organizations earn a profit is to distribute it among those who own the organization, nonprofit organizations are barred from distributing among their members any profits earned and have other important reasons for earning profits. There are many reasons why those who manage nonprofit organizations opt to accumulate net assets. For example, accumulated net assets can be used by those who manage nonprofit organizations as a source of future growth, a source of subsidy for unfunded programs, as a facilitator of allocations to the future, as a hedge against uncertainty (i.e. unexpected events), as a means to increase independence from the market place, and as a measure of financial success (Calabrese, 2012; Chang & Tuckman, 1990; McLaughlin, 2009; Tuckman & Chang, 1991).

Overall, the study of nonprofit finances is much broader than study of corporate finances because rather than focusing on the net income, it emphasizes “the availability of sufficient financial resources to support the mission” (Greenlee & Bukovinsky, 1998).

Nonprofit sector finances are different from the finances of the for-profit sector not only because of their double bottom line. Another unique characteristic of the nonprofit sector is the variety of sources from which organizations in this sector receive their resources. Unlike the for-profit sector that earns revenues mainly from sales and government organizations that obtain their revenues mostly from taxes, the nonprofit sector earns resources from several different sources, including: private giving; institutional philanthropy; government grants; service fees; investment income; and commercial income, among others. These unique characteristics of the nonprofit
sector require the development of economic and managerial theories specific to the sector. Such theory has to address the “most critical and special issue of nonprofit finance—what combinations of income sources work the best in alternative circumstances.” (Young, 2007, p. 16). The first essay of this dissertation contributes to the development of such a theory by exploring the particularities of nonprofit organizations’ revenues that make them more or less vulnerable to the effects of unforeseen events. It explores the composition and degree of diversification of revenue sources in different nonprofit organization subsectors and its relationship with risk.

It is in times of stress or struggle when the organizations’ strengths, weaknesses, and priorities are (often) revealed. Studying the operations of nonprofit organizations under stress intends to give researchers and managers a deeper understanding of how economic downturns might affect their organizations and how to prevent future distress or prevail if hard times must be endured.

1.5.2. Policy Justification: Health of the Nonprofit Sector

Achieving better understanding of how nonprofit organizations are affected by financial challenges and how they react to such challenges is important not only from a management perspective, it is also a very relevant policy issue. Governments and society as a whole are interested in a healthy nonprofit sector for at least three major reasons: (1) nonprofit organizations lessen the burden of government, (2) nonprofit organizations build social capital, and (3) the U.S. economy relies on a healthy nonprofit sector (Hall & Reed, 1998; Milward & Provan, 2000; Putnam, Leonardi, & Nanetti, 1994; Salamon, 1987).

Nonprofit organizations lessen the burden of government by carrying out some government responsibilities (Hall & Reed, 1998). The commonly used term “third-party government” refers to the practice in which governments turn to third parties to carry out public purposes (Milward &
Provan, 2000; Salamon, 1987). These third-parties are frequently nonprofit organizations that collaborate with governments to provide different types of public services. For example, nonprofit organizations commonly provide health, human, and social services to people in need. These public activities fall under the burden of government and nonprofits’ involvement relieves government from some of its responsibilities. In exchange for lessening the burden of government, the nonprofit organizations have been granted a variety of tax benefits by the Federal government as well as State and Local governments (Hansmann, 1981).

The importance of nonprofit organizations goes beyond the provision of services. Nonprofit organizations also play a key role in developing communities. The mere existence of a nonprofit sector contributes to the public good by “developing human connections, creating associational ties, and sustaining social capital—the bonds of trust and reciprocity necessary for a democratic society and market economy to operate effectively.” Similarly, nonprofit organizations play an important advocacy role and push forward the voice of those that have been traditionally unrepresented (Jenkins, 2000).

Finally, the overall health of the U.S. economy relies, in part, on the health of the nonprofit sector. Statistics from the National Center for Charitable Statistics estimate that in 2010 the contribution of the nonprofit sector to the U.S. gross domestic product was $805 billion or roughly 5.5% of the country’s GDP for the year (Blackwood, 2012). The importance of the nonprofit sector to the United States economy becomes even more relevant when we look at employment. In 2010, the nonprofit sector employed nearly 10.7 million paid workers which accounts for 10.1% of the U.S. employment (Salamon, Sokolowski, & Geller, 2012).
1.6. Limitations

The datasets I used for the analyses contained in this dissertation were obtained from the National Center of Charitable Statistics (NCCS) and derived from the tax reports (Form 990) that most nonprofit organizations have to file with the IRS. Form 990 data has inherent problems that can compromise both the internal and external validity of the research based on these data. Research about the quality of 990 data suggests that totals such as total revenues and expenses are more reliable than disaggregated line items because bigger organizations report more reliable information (Froelich & Knoepfle, 1996; Froelich, Knoepfle, & Pollak, 2000; Tinkelman & Mankaney, 2007). In addition, there is particular concern regarding the misreporting of fundraising and administrative expenses. Evidence suggests that managers underreport administrative and fundraising expenses and over report program service expenses (Krishnan, Yetman, & Yetman, 2006; Trussel, 2003). The longitudinal tests that I ran for this dissertation are also limited by the fact that the panel data is not stable and there are gaps in the data for a significant number of nonprofit organizations.

The approach I took to address these data issues was to always favor the reliability over the external validity of the analyses. In this regard, I applied several quality assurance steps aimed at increasing the reliability of the data used for the analyses. For instance, I added together disaggregated line items to test if they are equal to the total of the category. I only included an observation if the total revenues reported were equal to the addition of the revenue line items. A significant number of observations were dropped from the database due to reliability concerns which inevitably results in a reduction of the external validity of the research. Similarly, the gaps in the 990 reports for some nonprofit organizations resulted in a reduction of the sample size because I only kept the data of organizations for which a complete time series was available. The
third essay focuses only on nonprofit organizations that merged in New York State because data on nonprofit mergers for other States was not readily available. All these data limitations compromise the generalizability of the results to the whole nonprofit sector. However, the generalizability of the results is only seriously compromised for small nonprofit organizations which are more likely to have inconsistencies in their data and/or miss reporting years.

Another important limitation of this dissertation is that the analyses are based on a relatively short time series and the results may not capture long term changes after the attacks. On one hand, the analyses of the organization’s finances before the September 11 attacks is limited to up to 10 years before the attacks. On the other hand, and perhaps more importantly, the time series used for the different analyses ends only a few years after the attacks and thus the analyses do not take into account what happened in the long run to the organizations after the unexpected event. The results of the analyses might differ if longer time series were analyzed. For example, the impact of nonprofit organizations’ finances after the September 11 attacks might only be felt in the first one or two years after the attacks and the organization’s finances might normalize afterwards. Similarly, benefits of a merger might not be realized in the first years after the merger because the merged organizations are still adjusting. While this can be true, the results are relevant because those managing nonprofit organizations need to be mindful of how the short-term finances can be affected by unexpected event so that the organization can survive long-term. In this respect, the findings of this dissertation can help managers design short-term strategies to deal with unexpected events that, in the long run, also have an impact on the long term sustainability of the organization.

1.7. Organization of the Dissertation

This dissertation is comprised of five chapters. This first chapter sets the framework for the remaining chapters of the dissertation. It introduces the idea of event risk, which is the overall
theme that connects together the three essays of the dissertation, and makes a case for the need for a broad theory of nonprofit risk. Chapters 2, 3, and 4 are the three essays that constitute the core of this dissertation. Finally, Chapter 5 discusses the contributions made by this dissertation to an overall theory of nonprofit risk that takes into account how nonprofit organizations’ experience and deal with the risks posed by unexpected events. The policy and management implications of the contributions of this dissertation are also discussed in this chapter. Chapter 5 also concludes by introducing important questions to further develop our understanding of nonprofit risk.

1.8. References


Chapter 2: Nonprofit Organizations’ Revenues after September 11: An Application of the Benefits Theory of Nonprofit Finance

2.1 Introduction

The aftermath of the September 11 attacks is often thought of as a difficult time for the nonprofit sector in the United States. This belief can be partly attributed to several media reports that highlighted the struggles that individual nonprofit organizations and certain groups of nonprofits were experiencing. For example, reports in the news contended that while donations towards relief efforts were pouring in (Bernstein, 2001; Hu, 2001), organizations not related to relief efforts experienced significant drops in their revenues in New York City (Nussbaum, 2001) and all around the country (Lewin, 2001). News articles also reported that nonprofit organizations were being simultaneously affected by the contraction of the economy, the Wall Street Slump and disruptions to the mail service after the attacks (Nussbaum, 2001; Strom, 2002). However, fifteen years after the attacks we are still uncertain whether the anecdotal cases that were reported in the news are representative of the sector—or organizations from certain subsectors and/or geographic locations—or only represent isolated cases.

In this first essay, I examine nonprofit organizations’ revenues in the first two years after the September 11 attacks from two different perspectives. First, I assess whether the changes in nonprofit revenues after September 11 of individual nonprofit organizations, subsectors, and the nonprofit sector as a whole were statistically significant. Then, I explore whether the revenue mix of nonprofit organizations can explain whether their total revenues experienced any disruptions following the September 11 attacks.

The remainder of this essay is organized as follows: I start by reviewing the literature about the nonprofit response after the September 11 attacks, paying special attention to those studies that focus on the changes in revenue experienced by nonprofit organizations. I then present a
classification of nonprofit revenues and review the research on the different nonprofit revenue sources. After discussing the major sources of revenue for nonprofit organizations, I refer to the different theories about the relationship between nonprofit revenue mix and financial risk that relate to the hypotheses of the essay. I then introduce the two stages of analyses performed and the results of the analyses. I conclude the essay by discussing the limitations of the study, some practical implications of the results, and avenues for future research.

The overall results suggest that, contrary to common belief, the nonprofit sector did not suffer greatly after the September 11 attacks. Perhaps more interesting, the results provide support to an emerging theory from nonprofit finance called the benefits theory of nonprofit finance. That is, organizations with a better match between the nature of the services provided and the sources of revenue experienced lesser disruptions to their total revenues during the two years following the September 11 attacks. However, these results need to be interpreted with caution due to unresolvable issues with the sample used for the analyses that hamper the generalizability of the analyses.

2.2. Research on September 11 and the Nonprofit Sector

Fifteen years after the attacks, research exploring the extent to which the finances of nonprofit organizations were actually impacted by this tragic event is surprisingly scarce. A more comprehensive understanding about the shock that the attacks had on organizations in the sector can be an invaluable contribution to our understanding of the repercussions that unexpected events can have on certain nonprofit organizations and the subsector in general. It can also contribute to the development of a broad theory of nonprofit risk that incorporates event risk. Although also important, the great majority of the research conducted on September 11 and the nonprofit sector has been generally limited to the philanthropic response to the tragic events and the challenges
faced by nonprofit organizations providing relief efforts (see for example: Salamon, 2004). The next sections briefly reference the scarce research available about September 11 and the nonprofit sector.

2.2.1. Philanthropic Response to September 11 and Challenges of the Nonprofit Sector

The research exploring the effects of September 11 on the nonprofit sector has mostly focused on the outpouring of donations from corporations, foundations, and individual giving towards relief efforts (Renz, Cuccaro, & Ganguly, 2002) and how effectively were nonprofit organizations used these funds to provide relief to the victims of the attacks.

The Center on Philanthropy tracked the private funding for relief and recovery and estimated that around $2.8 billion was raised for relief efforts one year after the attacks (Renz et al., 2002). A telephone survey conducted in 2001 found that individual giving in response to the tragedy also reached unprecedented levels as 66% of the American households reported having responded to the attacks by making a financial contribution to the relief efforts (Steinberg & Rooney, 2005).

The outpouring of donations to nonprofit organizations after the September 11 attacks suggests that Americans trusted the nonprofit sector to deal with one of the worst tragedies the country had ever encountered. However, Salamon (2004) suggests that nonprofit organizations’ experience aiding those directly affected by the September 11 attacks evidenced important limitations of the sector. According to Salamon (2004), nonprofit organizations’ experience responding to the September 11 attacks reveals the perils of the “go-it-alone philanthropy” which is “the view that philanthropy and the State should operate independently of each other, that philanthropy is a substitute for state action, and that collaborations between charity and
government are fraught with peril for charitable institutions” (Salamon, 2004, p. 2). That is, although nonprofit organizations were committed to their mission of bringing relief to the victims of the attacks, the lack of a coordinated approach between nonprofit organizations and government organizations proved to be an obstacle for effectively accomplishing their mission.

The existence of hundreds of nonprofit organizations and government entities that were directly involved in the relief efforts — each one bringing their own procedures and criteria for aid — complicated the process that the victims had to follow for applying for and receiving aid. A report from the Government Accountability Office (GAO) found that there was a confusion and lack of coordination among nonprofit organizations in the early stages of disaster relief (US Government Accountability Office, 2002). These circumstances led Greene (2002) to state that the nonprofit sector failed to seize the opportunity that was presented to show how they can respond effectively to emergencies.

In addition to the lack of a coordinated effort, the nonprofit sector was also affected by isolated scandals that involved particular nonprofit organizations. For example, the American Red Cross was highly criticized for its plan to use funds collected for September 11 relief efforts to prepare for future disasters and not exclusively for the victims of the attacks (Chronicle of Philanthropy, 2001; Maehara, 2002). Another publicized case that unveiled problems with the nonprofit sector is that the IRS streamlined the creation of nonprofit organizations that claimed to provide relief efforts, yet many organizations created for this purpose were diverting funds for other purposes (Jones, 2002). Finally, isolated cases of nonprofit organizations that were believed to have ties with terrorist groups affected the image that Americans have of the nonprofit sector (Williamson & Sinclair, 2002). These controversial cases, in conjunction with the failure to have
a coordinated response to the attacks, may have had a negative impact on the public’s trust in the nonprofit sector (Greene, 2002).

2.2.2. September 11 Impact on Nonprofit Organizations

Although to a much lesser extent than the philanthropic response, studies have also explored the effect that the September 11 attacks had on the operations of nonprofit organizations. For example, one report, based on a survey of 125 neighborhood organizations from New York City conducted two months after the September 11 attacks, found that 85% of the organizations surveyed stated having been adversely impacted after the attacks (Derryck & Abzug, 2002). This study also found that those organizations that were affiliated with networks of nonprofit organizations used their connections to find additional assistance and were able to alleviate the adverse impact suffered after the attacks.

Surveys with nation-wide samples also suggest that the revenues of some types of nonprofit organizations were negatively impacted after the September 11 attacks. For example, a survey conducted by the Association of Fundraising Professionals (2002) shortly after the attacks suggests that nonprofit organizations in the arts, cultural, and humanities subsectors experienced reductions in contributions in October 2001. The survey was conducted again in January 2002 and an unusual number of professional fundraisers reported having experienced drops in contributions from fundraising campaigns, annual funds, and direct mail solicitations (Association of Fundraising Professionals, 2002). The Center for Civil Society (Salamon & O’Sullivan, 2004) conducted a nationwide survey of nonprofit organizations in 2003 to address the impact on the nonprofit sector of the recession that followed the attacks. The survey results showed that nearly 90% of the 236 organizations surveyed reported some level of fiscal stress during 2003. However, this perception of “fiscal distress” appears to be driven more by increasing costs than reductions in revenue as
34% of the organizations reported having experienced revenue reductions while 66% reported increases in expenses (Salamon & O’Sullivan, 2004).

While suggestive, the results of these surveys have limitations that restrict the conclusions that can be drawn from them. On one hand, the survey conducted by the Association of Fundraising Professionals focuses only on private contributions and, while an important source of nonprofit revenues, total revenues of nonprofit organizations are comprised of many other sources that are not considered by the survey. On the other hand, the survey conducted by the Center for Civil Society fails to capture the changes that occurred in the year immediately following the attacks as it was conducted in 2003.

In addition to the surveys, a more recent panel-data analysis (Yurenka, 2007) of 990 data found that in 2002 and 2003 there was a shift of around $4 billion and $12 billion respectively in donations towards national security, public safety, and science/technology organizations from other sectors such as arts, human services, and civil rights. Guerrero and Purtell (2011) raised some concerns about the methodology used by Yurenka that compromise the reliability of the study’s results. In particular, Yurenka’s decision to impute values to the missing data points in her panel data was found to be problematic because this approach reduces the inherent volatility in the 990 data. The methodological choice to impute missing observations reduces the standard errors and inflates significance measures. In addition, the study focused on contributions disregarding the fact that many organizations in the nonprofit sector obtain most of their revenues from other sources.

Contrary to the common belief about the impact of September 11 on nonprofit revenues, Guerrero and Purtell (2011) found that the number of organizations that experienced statistically
significant revenue increases was higher than the ones that experienced significant revenue decreases after the attacks. Their results suggest that larger organizations were disproportionately affected after the attacks primarily due to greater shares of investment income and the crash of the financial market after the attacks. However, these results are not generalizable to the nonprofit sector because their sample includes only around 17,000 organizations that filed their 990 reports for every year during the period 1990-2008. Guerrero and Purtell (2011) acknowledged that this may not be a representative sample because it excludes some small organizations that for a variety of reasons failed to file the report for at least one year during the 13-year period studied and also excluded recently founded organizations that started filing 990 forms after 1990.

2.3. Nonprofit Revenues

While research specific to the effects of the September 11 attacks on nonprofit revenues is limited and inconclusive, there is research on nonprofit finances that can inform the research questions of this essay. Of particular interest for the analyses proposed is the literature that has explored the characteristics of nonprofit revenues.

In this section I present a brief review of the relevant research that has been conducted on nonprofit revenues. I start by introducing the different types of revenue to set the stage for the discussion of the benefits theory of nonprofit finance to which this essay contributes. In a nutshell, the benefit theory of nonprofit finance suggests that income composition of nonprofit organizations is closely related to the type of service provided by an organization. This theory sets the framework for the overall argument of this essay, which is that certain mixes of nonprofit organizations’ revenues can mitigate the effects of event risk. Later in the essay I return to the postulates of the benefits theory of nonprofit finance.
2.3.1. Sources of Nonprofit Organizations’ Revenue

Nonprofit organizations get their revenues from a variety of sources, all of which may have been affected in different ways after the September 11 attacks. For this reason, it is important to start by describing the different revenue sources that are available to nonprofit organizations and reference the academic research that has been conducted exploring the particularities of each revenue source.

Academic literature has classified nonprofit revenue sources in different ways. For example, Hansmann (1980) distinguishes between two broad revenue sources: donative revenue and commercial revenue. These revenue sources match the two types of nonprofit organizations identified by Hansmann. Donative nonprofits “receive most of their income in the form of grants or donations” while commercial nonprofits get the “bulk of their revenue from prices charged for their services” (Hansmann, 1980, p. 840).

Froelich (1999) proposes an alternative categorization that highlights the importance of government funding in the nonprofit sector. His basic classification distinguishes between three broad sources of revenue: private contributions, government funding, and commercial activity. In this classification, government funding includes different sources of revenue such as government grants and government contracts.

Young (2007) distinguishes between seven different nonprofit funding sources: (1) individual giving; (2) institutional philanthropy; (3) government funding; (4) fee income and commercial ventures; (5) membership income; (6) investment income and; (7) volunteer resources. Finally, Neely (2014) distinguishes between 13 different revenue sources that correspond to the line items found in the 990 tax forms before 2008: (1) direct public support; (2) indirect public
support; (3) government grants; (4) program service revenue; (5) membership dues; (6) interest on investments; (7) dividends from securities; (8) other investment income; (9) net rental income; (10) net gain on sale of assets; (11) net income from special events; (12) gross profit from sale of inventory and; (13) other revenue.

The reliance on particular revenue sources varies considerably between nonprofit organizations (Chang & Tuckman, 1994; Young, 2007). While it is a common belief that all nonprofit organizations are mostly funded by donations and contributions from the public, this is far from reality. In fact, the nonprofit sector as a whole receives more of its total revenues from fees than from contributions (Salamon, 2003). Nonprofit organizations also receive considerable amounts of revenue from other sources such as government grants, investment income, and commercial income. For example, while organizations such as the Salvation Army, the American Red Cross, and CARE rely mostly on donations, other nonprofit organizations such as nursing homes, most hospitals, and the American Automobile Association rely mostly on service fees (Hansmann, 1980, pp. 840–841).

The sources of revenues that organizations rely on can vary considerably even within the same subsector. For example, while some organizations in the education subsector, such as the leading private universities, maintain large endowments and fund their operations with investment income (Hansmann, 1990), other educational organizations, such as charter schools, obtain most of their resources from government funding.

The nonprofit finance literature has studied independently some of the sources of revenue available to nonprofit organizations and identified particular characteristics of each one. According to Bowman (2011), “each revenue source has a unique combination of predictability and autonomy,

29
along with its own cost of development” (Bowman, 2011, p.147). To provide context to the different theories about the relationship between revenue mix and nonprofit risk, I briefly review relevant research conducted on four major nonprofit revenue sources: private contributions, government funding, commercial income, and investment income. Notice that, with the exception of investment income, these are the same categories proposed by Froelich (1999).

1. Private Contributions: Includes contributions and grants received from a variety of sources such as individuals, trusts, corporations, foundations, and other nonprofit organizations. Grønbjerg’s (1993) case studies of human service organizations found that private contributions are unpredictable and have high volatility. This volatility can be partly explained by the impact that economic conditions have on contributions. There is a particularly close relationship between the stock market and private contributions and contributions tend to decrease when the stock market is weak (Drezner, 2006). For example, a survey conducted by Guidestar in 2009 to evaluate the impact of the Great Recession revealed that 52% of the 2,979 surveyed nonprofits experienced a decrease in revenues during October 2008 to February 2009, compared to the same period a year earlier (McLean & Brouwer, 2009).

Research on private contributions has explored the factors that may explain contribution levels. For example, there is extensive research on how private contributions are affected by operational efficiency (Parsons, 2003). Research in this area has generally found that efficiency —measured as the ratio of program service expenses over total expenses— has a significant effect on private contributions (Callen, 1994; Okten & Weisbrod, 2000). This suggests that donors choose to give to organizations that will use the contributions for
program expenses rather than administrative expenses. Additionally, studies have also explored the effects of net asset accumulation on private donations. The net asset balances of a nonprofit organization represent the savings of the organization since it started operations. From an accounting perspective, net assets are the result of subtracting the liabilities from the assets. Net assets are the equivalent to the owner’s equity in the for-profit sector, but the word owner is not used because no one person or group owns a nonprofit organization (Finkler, Purtell, Calabrese, & Smith, 2012). There is evidence that suggests donors choose to withdraw donations from nonprofits that have higher than average accumulations of net assets (Calabrese, 2011; Marudas, 2004) because donors would rather see their contributions spent on current program services than saved for future uses.

2. Commercial Income: Nonprofit commercial funding comes in different forms, such as selling goods and services to the public, membership fees, or rental income. There is a trend in the nonprofit sector towards “commercialization” as a result of different external pressures to obtain alternative sources of revenue (Weisbrod, 2009). Some of these external pressures are reductions in charitable and government support, expanded demand for services, and increased competition from both for-profit and nonprofit-organizations (Cordes & Weisbrod, 1998; Salamon et al., 2012). According to this idea, organizations that saw their private contributions and government funding reduced after the September 11 attacks might have ventured into commercial income activities to replace the lost revenues. Commercial income has “never been a completely comfortable fit with nonprofit organizations, for various reasons related both to ideology and behavioral risk such as mission drift” (James & Young, 2007, p.93). The effects of commercial income on human
service nonprofit organizations were explored by Guo (2006) who found that commercial income has no effect on mission attainment but does contribute to the organizations self-sufficiency.

The research on nonprofit commercial income has also explored the relationship between commercial income and other types of nonprofit revenues. For example, Segal and Weisbrod (1998) explored the interdependence of commercial and donative revenues and found that, in some sectors, decreases in donative revenues result in increases in commercial activity. Similarly, James (1998) found that cross-subsidies are common in some subsectors where the reduction in private and government contributions has led to commercialization.

3. Government Funding: Nonprofit organizations receive funding that comes from different levels of government (federal, state, local) and in dissimilar forms such as government grants, fees, and contracts for services or Medicare/Medicaid payments. Government can vary depending on the political context (Salamon, 2003) and government funding patterns changed after the September 11 attacks as national security became a central issue in the political agenda (Lane, 2006). Government revenue can also come from entitlement programs like Medicare and Medicaid that are less dependent on political choices, and are likely to be more stable.

Research about government funding has placed special attention on the relationship between government funding and private contributions reaching conflicting conclusions. Some authors have found that government funding has a crowding-out effect on private contributions, that is, that donors withdraw donations from organizations that receive
government funding (Andreoni & Payne, 2003). However, others have found a crowding-in effect (Okten & Weisbrod, 2000), or a mix of crowding-in and crowding-out depending on the level of public funding (Brooks, 2000). Research on government contracting has also suggested that the distribution of government contracts is politically influenced (Marwell, 2004).

4. Investment income: Investment income is comprised primarily of interest, dividends, and capital gains and is a fundamental source of income for a small group of nonprofit organizations. However, this is a controversial source of income for some organizations because managers that focus on service delivery would rather see the resources used for current needs than accumulating and earning income. In addition, there is some inherent risk to investing that not all nonprofit stakeholders can tolerate. However, this source of revenue can be attractive for some managers because it generally requires less staff effort and usually comes with no strings attached (Bowman, Keating, & Hager, 2007).

2.4. Nonprofit Revenue Mix

Nonprofit organizations usually rely on a mix of these sources of revenue. One of the main goals of the study of nonprofit revenues, one to which this essay contributes, is to explore the question “what combinations of income best support the performance of a nonprofit organization seeking to address a given social mission in a particular set of circumstances” (Young, 2007, p. 17). Particularly, the focus of this essay is to explore how the revenue combination of a nonprofit organization affects the organization’s ability to face an unforeseen event. Nonprofit financial management literature presents different —often contradictory— answers to this question. While there is research suggesting that organizations that diversify their revenues lower both their
revenue volatility (Carroll & Stater, 2009) and financial vulnerability (Tuckman & Chang, 1991), some authors have also associated revenue concentration with financial stability (Chikoto & Neely, 2014; Grønbjerg, 1993).

These two apparently contradictory perspectives of the relationship between revenue structure and financial stability fail to recognize the particular characteristics of each revenue source, the particular characteristics of each nonprofit subsector, and the special features of nonprofit sector revenues. Concentration and diversification of revenues do not result in financial stability per se. An alternative approach to understanding the revenue composition of nonprofit organizations, sometimes referred to as the benefits theory of nonprofit finance (Wilsker & Young, 2010a), suggests that, rather than revenue diversification or concentration per se, what matters is the combination of the revenue sources (Kingma, 1993) and how they relate to the mission of the organization (Fischer, Wilsker, & Young, 2010). The benefits theory of nonprofit finance is further explained later in this essay.

2.4.1. Revenue Diversification

Nonprofit financial vulnerability theory hypothesizes that organizations that diversify their sources of revenue are less likely to be affected by financial crises because declines in sources of revenues (e.g. voluntary contributions) can be absorbed by increases in other sources of revenue (e.g. program services). Having several sources of revenue enables nonprofit organizations to balance losses in certain sources of revenue with gains in other sources (Chang & Tuckman, 1994; Tuckman & Chang, 1991). From a resource dependence perspective, organizations that do not diversify their sources of revenue are likely to have a high dependence on their main source of funding (Froelich, 1999) and experience instability if that source were to falter. For example, nonprofits that rely on private contributions may see their revenues impacted during financial
downturns or when there are other causes that attract more money (Carroll & Stater, 2009). Note that, while all hypotheses of this first essay presented from here on refer specifically to the revenue disruptions after the September 11 attacks, the findings are meant to contribute to our understanding of how nonprofit organizations are affected by other potentially disrupting events such as economic crises or natural disasters.

Nonprofit financial management literature has relied on organizational behavior theories to better understand revenue diversification in the nonprofit sector (Chang & Tuckman, 1994). For example, from a resource dependence perspective, organizations need resources to survive and therefore depend on the sources of those resources (Bielefeld, 1992; Froelich, 1999). An organization has power over another organization to the extent that it has resources the other organization depends on. Nonprofit organizations can increase their independence by diversifying their revenues and avoiding dependence on few sources of resources. To the extent that the resources of an organization are not concentrated in few sources but spread amongst several sources, an organization can increase its independence and keep away from being controlled by other organizations. From a nonprofit management perspective, this means that nonprofit organizations manage their dependence by looking for additional sources of revenue and diversifying their revenue portfolio (Froelich, 1999). Institutional theory can also help explain revenue diversification in the nonprofit sector. From this perspective, revenue diversification is associated with “social acceptance and legitimacy” (Chang & Tuckman, 1994, p. 276) of an organization. Nonprofit organizations that are more known and recognized are likely to have access to more sources of revenue and have more diversified revenues.

Empirical studies of revenue diversification in the nonprofit sector often rely on a Herfindahl–Hirschman Index (HHI) as a measure of diversification (Trussel, 2002; Tuckman &
Chang, 1991). This index was initially developed from the contributions of Hirschman and Herfindahl as a measure of market concentration in the context of international trade and was adapted to measure the degree to which nonprofit organizations have diversified or concentrated their revenue sources.

Relying on HHI as a measurement of revenue diversification in the nonprofit sector has at least four shortcomings that need to be considered. First, it fails to recognize that not every organization can obtain funds from all the different sources of revenues available. Sources of revenue available to nonprofit organizations vary depending on the subsectors. The value that the index takes does not take into account the actual number of sources available to each nonprofit organization. Second, the information available for calculating the HHI index distinguishes between general classes of revenues, not individual sources. For example, government contributions revenue in the Form 990 groups all the grants received by different government organizations. Nonprofit organizations can receive revenues from different government sources (local, state, and federal) and grouping all of these revenues in one category ignores the singularities of the different government sources as well as the different programs associated with each government source. Note that government revenue also comes from entitlement programs such as Medicare and Medicaid and is usually presented in the Form 990 as a type of program service revenue. Third, it fails to take into account the extent the revenues are concentrated in a particular source. For example, concentration of government funds is different from concentration of private contributions and the HHI index fails to capture this information. Finally, it fails to consider the correlation between the different revenue sources. Combinations of volatile sources can be more predictable than just one source if they are not correlated (Bowman, 2011). Some of these shortcomings can be addressed by the portfolio approach, discussed later in this essay which
not only takes into account the number of revenue sources but the volatility of each source as well as the relationship between sources.

Despite these limitations, the HHI index has been the measurement most frequently used in the nonprofit finance academic literature as a proxy of revenue concentration/diversification because it can be constructed with the data available and, although imperfect, can provide useful information about the level of concentration/diversification of revenues. Academic research on nonprofit finances has relied mostly on 990 data that, despite not having extensive detail on the revenue sources, is by far the most comprehensive source of financial data for conducting research in this area. For example, Tuckman and Chang (1991) relied on 990 data and constructed the index as one of the determinants of nonprofit vulnerability, reasoning that diversified revenues offer nonprofit organizations more flexibility when facing a financial shock. The HHI used by Tuckman and Chang (1991) was calculated with only three major revenue sources: donative income, investment income, and earned income.

Three years after their initial paper on nonprofit financial vulnerability, Chang and Tuckman (1994) focused their study on revenue diversification and found a correlation between their HHI index and commonly used measurements of financial stability. For example, they found significant correlations between the HHI index and financial ratios such as operating margin and total assets as a measure of the size of an organization. Based on these findings, they concluded that “nonprofits with multiple revenue sources are more likely to have a strong financial position than are those with concentrated revenue sources” (Tuchman & Chang, 2004, p 288).

Carroll and Stater (2009) further studied the relationship between revenue diversification and financial vulnerability by exploring how revenue diversification affects revenue volatility. The
reasoning behind the hypothesized relationship between revenue diversification and revenue volatility is that organizations with more diverse sources of revenue are likely to have more stable revenues. In this respect, reducing revenue volatility is a goal for nonprofit organizations, and revenue diversification is a mean towards that end. They argued that revenue volatility negatively “influences a nonprofit organization’s ability to manage the uncertainty of funding sources over time and the direct flow of financial resources into the organization” (Carroll & Stater, 2009, p. 951). Their empirical tests suggested that nonprofit organizations can reduce revenue volatility by diversifying their revenues. Note that their measurement of revenue diversification was the HHI, which was constructed with the same three types of revenue (donative income, investment income, and earned income) used by Tuckman and Chang (1991). The study found that organizations that relied equally on these three types of revenue experienced less revenue volatility. Additionally, their results suggest that revenue diversification does not affect all organizations equally and that there are diminishing returns to revenue diversification. Organizations with revenues highly concentrated in one source of income that opted to diversify their revenue sources experienced higher reductions in revenue volatility than organizations with already diversified revenues that sought to further diversify their funding sources.

Looking for alternative sources of revenues is one of the options available to nonprofit organizations when facing a financial crisis. In the John Hopkins Institute for Policy Studies survey referenced before, 32% of the nonprofit organizations that manifested not being impacted by the 2008-2010 recessions were able to avoid the financial strain because they had diversified their funding (Salamon, Geller, & Spence, 2009). Having diversified revenues provided these nonprofit organizations protection in advance of an expected event —such as the recession— that had the potential of affecting the sources from which the nonprofit organization earns revenues. The level
of risk, understood here as the possibility that an unexpected event has a negative impact on the revenues earned, was reduced by diversifying revenues.

**H1: Organizations with more diversified revenues experience lower levels of risk after an unexpected event**

2.4.2. Revenue Concentration

While revenue diversification has been associated with nonprofit financial stability, this does not necessarily mean that revenue concentration leads to financial instability. Research has also found evidence suggesting that revenue concentration is associated with financial stability. Specifically, human service organizations with a high concentration of government funds (e.g. Medicare and Medicaid) are associated with higher levels of revenue stability (Grønbjerg, 1993). This finding challenges the nonprofit financial vulnerability assumption that there is a direct relationship between revenue diversification and revenue stability. However, Grønjberg’s study was focused exclusively on the human services subsector and the findings are not generalizable across the different segments of the nonprofit sector.

A recent study by Chitoko and Neely (2014) also finds positive outcomes of revenue concentration strategies in the nonprofit sector. In particular, they found a positive relationship between revenue concentration (measured with the HHI index) and revenue growth. Unlike Grønbjerg’s (1993) findings that are specific to the human services subsector, the results of Chitoko and Neely’s (2014) analysis can be generalized to the whole nonprofit sector as their sample includes observations from all the nonprofit subsectors.
2.4.3. Portfolio Approach

An emerging alternative approach to understanding revenue diversification in the nonprofit sector borrows from corporate finance. In 1952, Markowitz introduced the modern portfolio theory (MPT) which is a popular theory from corporate finance that is used to reduce investment portfolio risk by increasing the diversification of the assets in the portfolio. From a MPT perspective, diversification is not achieved simply by building a portfolio made from different assets, but rather by building a portfolio with assets that are uncorrelated or have low correlation (Markowitz, 1952). Kingma (1993) borrows from this concept of diversification to study the revenue portfolio of nonprofit organizations and how it relates to risk.

From the MPT perspective, a nonprofit organization does not reduce risk and increase revenue stability just by obtaining revenue from different sources. What matters is the correlations between the different sources of revenue. Because some revenue sources are generally more stable than others (e.g. government funding in the human sector), the volatility of all the revenue sources of an organization should be taken into account to assess the risk faced by an organization. To reduce risk, a nonprofit organization should attempt to build revenue portfolios comprised of revenue sources that have low correlations between them.

In his analysis of the revenue structure of foster care organizations in New York State, Kingma (1993) finds that organizations that rely more on government funding have more predictable revenues. However, he also recognizes that this does not imply that nonprofit organizations should aim to concentrate their revenue in public sources. This is simply the consequence of government funding being more stable for foster care organizations in New York State which is a source of entitlement revenue. The results of his analyses also suggest that organizations that do not rely heavily on one particular source of revenue have a greater real annual
growth rate. In general, Kingma presents evidence supporting a portfolio approach to nonprofit revenue diversification and recommends that “each nonprofit organization manager, in order to choose the correct level of revenue diversity, must consider the variance of all streams of revenue, the covariance between these streams and the expected level of growth of each stream” (Kingma, 1993, p. 118). Kingma’s results should be interpreted with care as his study is based on the stability of revenue growth, not historical year-to-year revenue variations.

2.4.4. Benefits Theory of Nonprofit Finance

The three approaches to revenue mix discussed above (revenue diversification, revenue concentration, and revenue portfolio) all share the limitation of failing to consider the relationship between the goods/services provided and the revenue source. They also do not incorporate into the analyses the fact that nonprofit organizations provide a very wide variety of goods and services. This limitation is resolved by a fourth approach, the benefits theory of nonprofit finance (Wilsker & Young, 2010a), which focuses on the relationship between sources of revenue and the mission of the organization rather than just the degree of concentration/diversification of revenues, or the correlations between the different streams of revenues. The benefits theory of nonprofit finance “postulates that revenue streams derive from the nature of the services offered by nonprofit organizations, [which] offers a way to explain the diversity of nonprofit revenue sources” (Wilsker & Young, 2010a, p. 197).

Weisbrod (2009) was the first to introduce the basic idea that there is a relationship between revenue streams and the goods and services provided by nonprofit organizations. Weisbrod originally proposed the use of a “collectiveness index” to reflect the “causal relationship between the way an organization obtains revenues and the nature of its outputs” (page 75). Organizations have a higher “collectiveness index” when they have higher proportions of donations/contributions
and are presumed to produce more public goods/services. On the other hand, organizations with a lower “collectiveness index,” that is, those that obtain their revenues from commercial activities, are expected to produce private goods/services that are paid for directly by the recipient of the goods/services. The collectiveness index reflects the position of a nonprofit on the spectrum of providing purely private goods/services to providing purely public goods/services.

Kingma (1997) takes the relationship between types of goods provided and revenue sources one step further and suggests that the types of goods/services provided by a nonprofit organization determines the sources of revenue it can attract. Different nonprofit subsectors are expected to rely on different funding sources depending on the public/private nature of the goods they provide. For example, some nonprofit organizations such as hospitals provide private benefits as individual clients or customers receive the services of the organization. Nonprofit organizations that provide private goods/services are generally funded by service fees that can be charged directly to the individual(s) receiving the services. Soliciting private contributions is unlikely to be a successful strategy for organizations providing private services because donors are reluctant to contribute to individual interests. By contrast, organizations delivering public benefits will find a hard time selling its services for a fee because no particular individual willing to pay for the service/good is benefited by the organization, instead it is the society as a whole that benefits. Therefore, these organizations often rely on private contributions, foundation grants, and/or government grants and contracts. An important implication of this relationship between goods provided and sources of revenue is that not all sources of revenue are necessarily available to all nonprofit organizations.

Empirical research on the benefits theory of nonprofit finance has found evidence to support it. For example, Fisher et al. (2010) found that the nonprofit subsectors that generally provide public goods and services have a lower proportion of earned income compared with those
organizations that produced private goods and services. In addition, the organizations that rely more on contributions are the ones that provide public goods and services. Similarly, Wilsker and Young (2010) found that nonprofit organizations that have higher expenses in activities that result in the production of private goods are associated with higher reliance on earned income, while organizations with higher expenses in public activities have higher proportions of public and private contributions.

Due to differences in the nature of goods provided by the organizations that comprise the nonprofit sector, the results of the analyses are likely to vary by subsectors and the types of goods/services provided by each subsector. Besides the basic notion that nonprofit organizations that provide public goods/services tend to rely more on private contributions while those that provide private goods rely more on commercial income, existing theory does not provide additional insights on how other revenue sources are related to goods and services provided nor what combinations of revenue or level of revenue diversification can reduce risk. In this respect, the subsector analyses presented in this dissertation are of exploratory nature as there is no theory to formulate hypotheses regarding the results for each subsector.

Following the postulates of the benefits theory of nonprofit finance, the overall expectation is that risk is associated with the nature of the goods generally provided by the nonprofit organization and whether it matches with the types of revenues earned by the organization. For example, organizations from subsectors that generally provide more public goods/services and rely more on public contributions are expected to experience lower revenue changes after a disrupting event. Similarly, organizations from subsectors that generally provide more private goods/services and rely on commercial income are expected to experience less revenue disruptions. While previous research relying on the benefits theory of nonprofit finance has focused on establishing
the relationship between the nature of goods provided by nonprofit organizations (e.g. private, public, mixed) and the revenue sources of nonprofit organizations (Fischer et al., 2010; Wilsker & Young, 2010a), the analysis presented in this essay takes a step forward by testing whether nonprofit organizations that obtain more revenues from the source that matches the type of goods/services it provides experience lower levels of risk.

**H2:** Nonprofit organizations that match their revenue sources with the nature of the goods/services of the organizations in their subsector experience lower levels of risk after an unexpected event

**H2a:** Nonprofit organizations that provide more public goods/services and have higher proportions of contributions revenues experience lower levels of risk after an unexpected event

**H2b:** Nonprofit organizations that provide more private goods/services and have higher proportions of program service revenues experience lower levels of risk after an unexpected event

2.4.5. Other Factors Affecting Revenues

Organizations that have inter-organizational ties can rely on their connections with other organizations to obtain additional revenue from other sources. Research conducted shortly after the terrorist attacks by Derryck & Abzug (2002) suggests that nonprofit organizations in New York City that were affiliated with networks of organizations experienced less disruptions after the terrorist attacks.

**H3:** Nonprofit organizations that have inter-organizational ties experience lower levels of risk after an unexpected event

Other organizational characteristics can also affect the risk faced by nonprofit organizations. For example, factors such as the size and the age of an organization can determine
the ability of an organization to obtain and retain revenues from different sources. Carroll and Stater (2009) found that bigger organizations — measured in terms of total expenses — had lower levels of revenue volatility. Fischer et al. (2007) found that certain capabilities and resources that larger organizations have make it easier for them to look for new sources of revenues and increase revenue diversification. For example, organizations may have more fund development resources to establish reliable sources of income that can sustain the organization.

2.5. Data

I based the analyses contained in this paper on two different databases from the National Center for Charitable Statistics (NCCS) constructed with data derived from the 990 forms filed by nonprofit organizations. The Form 990 is the Internal Revenue Service (IRS) form that must be filed annually by tax exempt organizations that includes certain information about the organization’s governance, mission, programs, and finances. Some organizations such as churches are exempt from filing, and small organizations are allowed to file Form 990-EZ which is a shorter version of the form. The two databases from NCCS that I used were: (1) the “Digitized Data” from 1998 to 2003 and (2) the Core Files from 1991 to 2003. While both databases include information the Form 990 (or 990EZ Form) filed by 501(c) (3) public charities with the IRS, they differ in the number of variables available and range of years that they include. The Core Files contain a limited number of variables from the Form 990, but are available for a longer period of time (1989-current). While the Digitized Data contains the majority of the variables included in Form 990 that nonprofit organizations file with the IRS, it is only available for the period 1998 to 2003. In this respect, depending on which data source is used, there is a tradeoff between number of years and the amount of information available for each year. As I discuss in the methodology section later in this chapter, I rely on the information from both databases for different parts of the analyses. In
general, I was particularly interested in the disaggregated revenue information that can only be obtained from the Digitized Files as well as the time series of at least 10 years only available from the Core Files.

While the Digitized Files include the disaggregation of revenue into 13 different categories, the Core Files include disaggregated revenues from only three general categories: contributions and grants, program service revenue, and investment income. Although previous research on revenue diversification has considered this level of disaggregation adequate (Carroll & Stater, 2009), more recent research suggests that the results of the analyses can be dependent on the level of disaggregation chosen by the researcher to calculate the revenue diversification (Chitoko, 2014). Aggregation of revenue data in only three categories can lead to the loss of important information and invalid conclusions. Following the recommendation by Chitoko (2014), the revenue diversification measure used in this analysis takes into account a higher level of disaggregation of the nonprofit revenues. I included a total of ten different revenue categories from the Form 990 for calculating the revenue diversification measure.

The combined Core Files from 1991 to 2003 include more than 3 million observations of about 410,000 different 501(c) (3) nonprofit organizations. The combined database is not stable and only around 45,000 organizations include observations for all the years of the time series. There are many gaps in the database presumably due to different reasons such as organizations not filing the Form 990 for some years, organizations going out of business, and organizations that were recognized as nonprofit organizations by the IRS after 1999 and therefore did not file for the previous years. In addition, the 990 information has reliability issues (Brostek, 2003; Froelich & Knoepfle, 1996; Froelich, Knoepfle, & Pollak, 2000) that required me to drop organizations from the analyses. The data cleaning procedures that I followed included deleting all observations that
reported having negative revenues as well as deleting all observations where the sum of the disaggregated revenues was not within 5% of the total revenues reported.

In addition to dropping observations due to reliability concerns, I also dropped observations when the nonprofit organization filed the Form 990Z. Organizations that had gross receipts of less than $100,000 during a fiscal year and have total assets that are less than $250,000 at the end of the fiscal year were allowed to file a Form 990Z for the years included in the analyses. The Form 990Z is a shorter version of the 990 and does not include the level of revenue disaggregation that I needed for the analyses. Therefore all the observations for which the nonprofit organization filed a Form 990Z were dropped from the analysis.

Following Calabrese (2011), the size of the database was further reduced because I also dropped observations when the nonprofit organization did not file the Form 990 using accrual accounting as required by Generally Accepted Accounting Principles (GAAP). There are important differences between accrual accounting and other bases of accounting (e.g. cash accounting) in terms of when revenues are recognized (Finkler et al., 2012). This includes including non-accrual financial information which would introduce measurement error into the analyses. There is a high correlation between the size of a nonprofit organization and the method of accounting: bigger organizations are much more likely to use the accrual method of accounting than smaller organizations. For example, Calabrese (2011) found that while around 66% of the organizations in the Digitized Files use the accrual method of accounting, the revenues reported correspond to 96% of the total revenues of the subsector.

Finally, another data challenge that I needed to address is the fact that not all nonprofit organizations have the same fiscal year ending date. Around 50% of the organizations end their
fiscal year on December 31, and around 20% do so on June 31; the remaining 30% end their fiscal year in any of the remaining 10 months. This is relevant for the analyses performed because the number of months of financial information after the September 11 attacks reported in the Form 990 varies depending on the fiscal year ending date. For example, an organization that ended the fiscal year on 1/31/2002 would potentially have been affected by the attack for roughly 5 of the 12 months in a year. When the same organization files the form again in 2003, their 2nd filing after the attack includes information of more than one full year after the September 11 attacks. For this reason, the analyses include two years of impact for each organization (2002 and 2003) so that at least one full year after the September 11 attacks was included for every nonprofit organization in the sample. These two years constitute the event period of the analysis.

The different data handling decisions significantly reduced the size of the sample used for the analyses. Only organizations with reliable Form 990 information for the thirteen years in the period 1991-2003 were included in the sample. In this respect, I traded the external validity of the results for the internal validity of the analyses. The table below starts with the total number of organizations that filed a Form 990 and are included in the Digitized Data of 2003, and then shows the number of organizations that were dropped and the reason for which they were dropped. For example, 229,674 of the starting 268,917 organizations were dropped from the analysis because they either reported negative revenues for at least one year of the 1991-2003 period, or the dataset did not include an observation for every year in the same period. In addition, 2,151 and 13,432 organizations were dropped, respectively, because they filed the Form 990Z or did not use the accrual method of accounting for at least one of the reports in the 1991-2003 period. The last two rows of the table show the number of organizations left after the cleaning procedures (22,821) and the number of observations included in the dataset (45,642).
### Table 2.1. Data Cleaning Steps and Sample

<table>
<thead>
<tr>
<th>Data Cleaning Steps</th>
<th>Number of Organizations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Starting Number of Organizations in Sample (2003)</td>
<td>268,917</td>
</tr>
<tr>
<td>Organizations with incomplete 13 year time series or negative revenues</td>
<td>(229,674)</td>
</tr>
<tr>
<td>Organizations that filed Form 990 EZ</td>
<td>(2,151)</td>
</tr>
<tr>
<td>Organizations that did not use accrual method of accounting</td>
<td>(13,432)</td>
</tr>
<tr>
<td>Organizations with inconsistencies in revenue data</td>
<td>(839)</td>
</tr>
<tr>
<td>Resulting Number of organizations in Sample</td>
<td>22,821</td>
</tr>
<tr>
<td>Number of observations for two impact years (2002-2003)</td>
<td>45,642</td>
</tr>
</tbody>
</table>

In addition to the data cleaning steps, I performed other transformations to the data before running the analyses. Following Calabrese (2013), I adjusted the data for inflation using the Consumer Price Index (CPI) for all urban consumers obtained from the Bureau of Labor Statistics. I converted the total revenues of all organizations in the period 1991-2003 to constant 1992 dollars before running the different analyses. In addition, and following Hager (2011), all the disaggregated negative revenue values were set to $0.

I classified the 22,821 organizations included in the sample in nine broad nonprofit subsectors according to their National Taxonomy of Exempt Entities (NTEE) classification. While the NTEE —originally developed by NCCS— classifies nonprofit organizations in approximately 400 different categories, it can be collapsed into fewer categories. For example, a level of disaggregation of the NCCS categories commonly used in the nonprofit research adopt a classification of five major subsectors: Arts, Education, Human Services, Health, and Other. Due to the relevance that the benefits theory of nonprofit finance places on the subsector, I decided to opt for a more disaggregated classification than the five major categories that would be still manageable for subsector analyses. The table below displays the distribution of the nonprofit organizations in the sample by the nine broad NCCS classification.
Table 2.2. Distribution of Sample by Broad Nonprofit Subsectors

<table>
<thead>
<tr>
<th>Subsector</th>
<th>Frequency</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Arts, Culture, and Humanities</td>
<td>1,907</td>
<td>8.4%</td>
</tr>
<tr>
<td>Education</td>
<td>2,369</td>
<td>10.4%</td>
</tr>
<tr>
<td>Environment and Animals</td>
<td>593</td>
<td>2.6%</td>
</tr>
<tr>
<td>Health</td>
<td>5,387</td>
<td>23.6%</td>
</tr>
<tr>
<td>Human Services</td>
<td>9,577</td>
<td>42.0%</td>
</tr>
<tr>
<td>International, Foreign Affairs</td>
<td>325</td>
<td>1.4%</td>
</tr>
<tr>
<td>Mutual/Membership Benefit</td>
<td>38</td>
<td>0.2%</td>
</tr>
<tr>
<td>Public, Societal Benefits</td>
<td>2,084</td>
<td>9.1%</td>
</tr>
<tr>
<td>Religion related</td>
<td>541</td>
<td>2.4%</td>
</tr>
<tr>
<td>Total</td>
<td>22,821</td>
<td>100%</td>
</tr>
</tbody>
</table>

Note: No organization in the Other category was included in the sample

Figure 2.1 displays the geographic distribution by State of the nonprofit organizations included in the sample. Organizations from all 50 U.S. States were included in the sample. New York and California were the States with the most organizations in the sample with 2,387 (10.5%) and 2,082 (9.12%) respectively.
2.6. Method

The analyses performed for this essay consisted of two stages. For the first stage, I constructed a proxy for risk for the years that followed the September 11 attacks (2002-2003). For the purpose of this study, risk is understood as the possibility that outcomes of an organization are different from what is expected (Herman, Head, Jackson, & Fogarty, 2004). Following this definition, I operationalize risk by measuring the difference between the revenues expected to be earned by a nonprofit organization and the actual revenues earned by the organization. This difference is known as the abnormal revenue, which I use to create the standardized abnormal revenue (SAR). I use the SAR as a proxy for risk because it captures how much the actual revenues of an organization deviate from the expected revenues as determined by the historical revenues earned by the organization. The first stage also includes testing whether the abnormal revenues
after the September 11 attacks were statistically significant for all the organizations included in the sample for the two years following the attacks.

The second stage of the analysis involves regressing the revenue risk variable (SAR) on variables that capture different features of the revenue structure of nonprofit organizations (e.g. concentration/diversification, major revenue sources). This is done to identify characteristics of the revenue mix that explain the risk faced by a nonprofit organization after an unexpected event such as the September 11 attacks, or other events that can potentially disrupt revenues.

2.6.1. Stage 1: Standard Abnormal Revenue and Determining its Significance

Stage 1 of the analysis is meant to address the question whether the September 11 attacks disrupted the revenues of nonprofit organizations. To do this, I rely on the event-study methodology — a widely-used corporate finance tool— and adapted it to the study of nonprofit finances. Event studies are used in corporate finance to measure the effects of an event on the value of firms (MacKinlay, 1997). Events such as announcements of mergers, filings for bankruptcy, or companies defaulting can have a significant impact on market performance. The corporate finance literature often relies on the event study methodology to assess the significance of the impact. However, to a lesser extent, event study methodology has also been used for management research to evaluate the effect of internal corporate events (e.g. corporate control changes) and external events (e.g. enactment of major legislation) on organizations (McWilliams & Siegel, 1997).

The event-study methodology consists generally of five steps (Henderson Jr, 1990):

1. Identify the event.
2. Estimate the expected returns to individual organizations if the event had not happened.
3. Measure the difference between the observed returns and the expected returns (see step two) and standardize them. The abnormal return is a measurement of how much the actual return differed from the expected return which is determined using historical information. The standardized abnormal returns take into account historical variations to generate a standard value of the abnormal return.

4. Aggregate the standardized abnormal returns across organizations and across time.

5. Test to determine if the standardized abnormal returns are statistically significant.

I was able to adapt these basic steps of the event study methodology to estimate the standardized abnormal revenues after the September 11 attacks because there are no fundamental differences between return data and total revenues data. Both sets of data can be used to run a time series regression to predict an observation out of the sample and then compare it with the actual observation. In order to assess whether the September 11 attacks had a significant impact on the revenues of nonprofit organizations, I adapted the above five steps (Henderson Jr, 1990) to the data used for the analyses in the following way:

Step 1: The event identified are the September 11, 2001 attacks. The focus is on the changes in revenue of nonprofit organizations in the two fiscal years following the attacks (2002 and 2003).

Step 2: The expected revenues were estimated with an OLS regression of total annual revenues against year.

\[ Total\ Revenue = \alpha + \beta \ (Year) + \epsilon \]

I ran this regression using the NCCS Core files for every organization in the sample (22,821) for the periods 1991-2001 and 1992-2002. The parameter estimates for the 1991-2001 regressions were used to forecast the expected revenue of every organization in the sample for 2002. The
parameters for the 1992-2002 regressions were used to forecast the expected revenue of every organization in the sample for 2003.

Step 3: The expected revenues forecasted were then subtracted from the actual revenues to produce the abnormal revenue variable.

\[ Abnormal\ Revenue = \text{Actual Revenue - Expected Revenue} \]

The abnormal revenue was then standardized by dividing it by the standard error of the forecast to estimate the standardized abnormal revenue (SAR).

\[ \text{Standardized Abnormal Revenue} = \frac{\text{Abnormal Revenue}}{\text{Standard Error of the Forecast}} \]

This transformation generates a z-score, distributed N(0,1) that can be used as an independent or dependent variable for subsequent analyses (see for example Asquith & Mullins, 1986). The second stage of my analysis includes this Standardized Abnormal Revenue (SAR) as a proxy for risk (dependent variable).

Step 4: The estimated SARs were then aggregated across organizations and across time, by adding together the SARs of all the organizations in the sample for each year and then dividing the total by the square root of the sample size. This calculation results in the SAR for the full sample for each of the two years after the September 11 attacks. The full sample SAR for the two years (2002 and 2003) were then added together to estimate the cumulative abnormal returns (CSAR) for the full sample across both years.

Step 5: The last step is meant to run a test to determine whether the cumulative abnormal returns calculated in previous steps were statistically significant. To do this, the standard deviation (STD) for the CSAR's has to be estimated. This estimation is equal to the square root of \((T-2) \times (T-4))\)
where \( T \) is the length of the time series used to calculate the SAR. The average CSAR (ACSAR) is then estimated by multiplying \( 1/N \) times the standard deviation of the CSAR (STD) times CSAR where \( N \) is the sample size. Finally, the test statistic (\( Z \)) was estimated by multiplying the ACSAR times the square root of \( N \) (sample size).

The result of these calculations is a \( z \) statistic that can be used to determine whether the standard abnormal revenues are statistically significant for the two years after the attacks. That is, it provides a measure of the standardized impact of the attacks during the two years following the attacks across all organizations in the sample. These calculations can also be performed to determine the standardized impact of the attacks to particular subgroups that are of analytical interest (e.g. subsectors, regions).

2.6.2 Stage 2: Revenue Mix and Standardized Abnormal Revenue

The second stage of the analysis explores which characteristics of the revenue mix of a nonprofit organization explain the variance of the risk variable (SAR). One advantage of event studies methodologies is that the abnormal return calculations from stage 1 can be used on further analyses to explore what factors can explain the abnormal return (see, for example, Asquith & Mullins, 1986).

For the second stage of the analysis, I constructed most of the independent variables using disaggregated revenue information only available from the “Digitized Data.” I extracted a total of ten different revenue sources and merged them to the results from stage one using the Employer Identification Number (EIN) and the fiscal year of each nonprofit organization. I used the disaggregated revenue information to construct the independent variables that capture the characteristics of a nonprofit organization’s revenue structure.
Finally, I ran fixed effects model regressions of SAR against financial and organizational variables that test the hypotheses of the study. Separate regressions were run for each of the nine nonprofit subsectors identified according to NTEE. I ran each of the models with and without the HHI variable; this was due to the concerns mentioned before about the reliability of the index as a measure of revenue concentration/diversification.

Prior to running the regression models, I conducted tests to determine the most appropriate model for the data. Given that I am working with a panel database, the three estimation methods considered were a pooled OLS regression, a random effects model, and a fixed effects model. First, I ran an F-test and determined that not all the fixed effects estimates are equal to zero. As recommended by Hoeschle (2007), I also ran a Hausman test to determine if the slope coefficients from the random effects models and the fixed effects models differ significantly. The results of these tests suggest that a fixed effects model is more appropriate as the other models have omitted variable bias that is resolved by adding organization and time fixed effects.

I also conducted tests for heteroskedasticity, autocorrelations and multicollinearity in the models. The Wald test (Greene, 2008) revealed heteroskedasticity and the Woolridge test (Wooldridge, 2010) revealed serial correlation. Clustered standard errors were computed to make the model robust to these disturbances (Hoechle, 2007).

2.7. Significance of the change in nonprofit revenues after the September 11 Attacks

Figure 2.2 summarizes the results of the first stage of the analysis. It displays the SAR distribution for 2002, 2003, and for the average of the two years. The graphs are very similar to the graphs Guerrero and Purtell (2011) presented in their previous study of nonprofit revenue changes during the two years that followed the September 11 attacks. The graphs resemble a
normal distribution, are slightly skewed towards the left side, and with long tails to the right and to the left (truncated for presentation purposes). This suggests that although nonprofit organizations experienced both significant decreases and increases in their revenues after the attacks, the great majority of the organizations did not experience significant changes on their revenues. The histograms also suggest that many organizations experienced a slight decrease in their revenues. Note that the SAR for individual organizations for the event period ranged between -19 and 326.

Figure 2.2. Standardized Abnormal Revenues 2002, 2003, and 2002-2003 Mean

An analysis of the individual SAR for each nonprofit organization for the event period suggests that more organizations experienced statistically significant revenue increases than revenue decreases. The table below shows the percentage of organizations that experienced a significant revenue increase (SAR>1.96), a significant revenue decrease (SAR<1.96), and those that did not experience significant changes in their revenues. Note the higher percentage of
organizations that experienced a statistically significant revenue increase (14%) than organizations
that experienced a statistically significant revenue decrease (7%).

Table 2.3. Percentage of Nonprofit Organizations with Statistically Significant Revenue Changes

<table>
<thead>
<tr>
<th>Year</th>
<th>5% Significance (negative)</th>
<th>Not significant</th>
<th>5% Significance (positive)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2002</td>
<td>10%</td>
<td>74%</td>
<td>16%</td>
</tr>
<tr>
<td>2003</td>
<td>9%</td>
<td>76%</td>
<td>14%</td>
</tr>
<tr>
<td>Average 2002-2003</td>
<td>7%</td>
<td>79%</td>
<td>14%</td>
</tr>
</tbody>
</table>

The average SAR for 2002 was 3.19 and 1.89 for 2003. The Average Combined Standard Abnormal Revenues (ACSAR) was 5.08. This number can be interpreted as a z-statistic.

These results suggest that the impact of the September 11 attacks on nonprofit revenues was positive and statistically significant for the two years after the attacks. This result is the opposite of what I expected and has to be interpreted with care. It is plausible that small organizations that were dropped from the sample for the reasons discussed before were more negatively impacted than the ones included in the sample. In addition, the overall results are skewed by some organizations that have a very high SAR.

The histograms below (Figure 2.3) display the 2002-2003 average SAR distribution for the nine broad NTEE categories. An analysis of the SAR by subsector reveals some interesting differences as some subsectors appear to have fared better after the attacks. For instance the distribution of organizations in the health subsector and human services subsector are skewed
towards the right of the distribution while the distribution of organizations in other subsectors such as environment and animals, and mutual/membership benefit are more skewed towards the left.

**Figure 2.3. Standardized Abnormal Revenues by Subsector**

![Graph showing the distribution of standardized abnormal revenues by subsector.](image)

*Note: 2002-2003 mean, winsorized 1%*

The ACSARs for each of the nine subsectors (see Table 2.4) provide additional evidence to support a differential impact of the attacks on the revenues of organizations in the nonprofit sector. The ACSAR (z statistic) for only three (Health, Human Services, and Mutual/Membership Benefit) of the nine subsectors was significant at the 5 percent level. The remaining six ACSARs were insignificant at the 5 percent level and two of them were negative (Environment and Animals and Religion Related).

These results uncover important differences between subsectors and suggest that the September 11 attacks impacted nonprofit organizations in distinct ways. For example, the
mutual/membership benefit subsector has by far the highest score. This can be explained partly by the fact that only 38 organizations from this sector were included in the sample and few outliers skew the results. Only relying on these results, one can only speculate about the explanations behind these subsector differences. While the analysis of the ACSAR distribution by subsector provides an interesting insight into how the revenues of organizations within the different subsectors followed different patterns after the attacks, the more important question explores the reasons behind these differences. In the next sections of this essay I explore whether there is a relationship between the revenue impact measure (SAR) and the revenue mix characteristics of nonprofit organizations in the different subsectors.

Table 2.4. ACSAR by Subsector

<table>
<thead>
<tr>
<th>Subsector</th>
<th>ACSAR</th>
<th>Significance Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Arts, Culture, and Humanities</td>
<td>0.99</td>
<td>Not Significant</td>
</tr>
<tr>
<td>Education</td>
<td>1.56</td>
<td>Not Significant</td>
</tr>
<tr>
<td>Environment and Animals</td>
<td>-0.4</td>
<td>Not Significant</td>
</tr>
<tr>
<td>Health</td>
<td>9.65</td>
<td>Significant at 1%</td>
</tr>
<tr>
<td>Human Services</td>
<td>5.66</td>
<td>Significant at 1%</td>
</tr>
<tr>
<td>International, Foreign Affairs</td>
<td>1.11</td>
<td>Not Significant</td>
</tr>
<tr>
<td>Mutual/Membership Benefit</td>
<td>28.67</td>
<td>Significant at 1%</td>
</tr>
<tr>
<td>Public, Societal Benefits</td>
<td>1.57</td>
<td>Not Significant</td>
</tr>
<tr>
<td>Religion related</td>
<td>-0.75</td>
<td>Not Significant</td>
</tr>
<tr>
<td>All</td>
<td>5.08</td>
<td>Significant at 1%</td>
</tr>
</tbody>
</table>

2.8. Nonprofit Revenue Mix and Event Risk

For the second part of the analysis, I ran regressions of the SAR— which I use as a proxy for risk— against key characteristics of the revenue mix of nonprofit organizations. I ran these regressions by subsector to identify significant differences in the results and to determine whether the differences are related with the types of goods or services provided by the nonprofit sector.
The two way fixed effects regressions which I ran for this stage of the analysis were:

\[ SAR_{it} = \beta_1(\text{HHI(lagged)})_{it} + \beta_2(\% \text{ Government Contributions Percentage(lagged))} + \beta_3(\% \text{ Direct Private Contributions Percentage(lagged))} + \beta_4(\% \text{ Program Service Percentage(lagged)}) + \beta_5(2003 \text{ dummy}) + \beta_6(\text{Group Affiliation}) + \beta_7(\text{Natural Log of Assets}) + \eta_i + \delta_t + u_{it} \]

Where \( \eta_i \) are organizational fixed effects, \( \delta_t \) are time fixed effects, and \( u_{it} \) is the error term.

I first ran the regression using the full sample of nonprofit organizations and then using subsamples containing each of the nine broad nonprofit subsectors identified. I lagged the different explanatory variables related to the revenue mix of the nonprofit organizations (e.g. HHI, government contributions percentage, etc.) by one year both to avoid endogeneity problems. I also did this because I am interested in the revenue structure in the year before the impact of the attacks.

The SAR variable constructed in the first stage of the analyses is the dependent variable. This variable is a proxy for the event risk experienced by nonprofit organizations as it measures the difference between the expected and actual revenues earned by a nonprofit organization after the September 11 attacks. Again, note that while this analysis is performed to examine the risk faced by nonprofit organizations after the September 11 attacks, it is meant to shed light on how nonprofit organizations’ finances change after any potentially disruptive event. Following previous research on nonprofit finances (Calabrese, 2011a; Marudas, 2004), I winsorized the SAR variable to reduce the influence of outliers. That is, I replaced the extreme values of the measure with the value at 99 percentile from each end (positive and negative).

The HHI was introduced to measure revenue diversification/concentration following previous research on nonprofit revenues (Chang & Tuckman, 1994; Chikoto & Neely, 2014; Hager, 2001; Tuckman & Chang, 1991). The index is calculated using the following formula:
\[ H = \sum_{i=1}^{N} \left( \frac{r_i}{R} \right)^2 \]

Where \( N \) is the number of revenue sources available, \( r \) is the revenue from each of the different sources and \( R \) is the total revenue. The value of the index goes from 0 to 1 and the index assumes a value of 1 where there is no revenue diversification and gets closer to zero as revenue diversification increases. The index was constructed using ten different revenue sources available from the Form 990. Earlier, I mentioned that the revenue information in the Digitized Datasets includes 13 revenue sources. However, I used the combined investment income variable— also included in the Digitized Database— that adds together four different revenue sources (interest on savings and temporary cash investments, dividends and interest from securities, net rental income, and other investment income).

A negative and significant coefficient for HHI provides support to the hypothesis that organizations with more diversified revenues experienced less revenue disruptions. As discussed before, there are some concerns about the validity of this index as a measurement of revenue concentration/diversification. To the extent that this indicator does not precisely measure concentration/diversification, it is possible that it introduces bias to the research. For this reason, the analyses were conducted with and without this variable.

Percentage (%) government revenues was constructed by adding government contributions (grants), Medicare/Medicaid payments, and fees and contracts from government agencies, and dividing the addition by total revenues.

Percentage (%) direct private contributions was constructed by dividing total direct public support by total revenues.
Percentage (%) program service revenue was constructed by subtracting Medicare/Medicaid payments and fees and contracts from government agencies from the program services total reported in Form 990. Note that the program services revenue line item in Form 990 includes Medicare/Medicaid payments and fees and contracts from government agencies which I subtracted from the program service total because they were added as government revenue. The percentage program service revenue variable is the division of program service revenue by total revenues.

Affiliation with other nonprofit organizations was constructed using two different fields from the Digitized dataset. This is a dummy variable that takes the value of 1 when a nonprofit organization reported having filed a group return or reported having filed a separate report despite being covered by a group ruling and takes a value of 0 otherwise. The 2002-2003 average SAR was .524 for the affiliated organizations and .585 for the non-affiliated organizations.

Following Trussel (2002), I used the natural log of total assets as a measure of the organization’s size. I used the log transformation of this variable due to the wide range of total assets reported by organizations in the sample.

Finally, I rely on Weisbrod’s (2009) collectiveness index concept to measure “a nonprofit’s position on the spectrum from purely private to purely public” and to reflect “the degree to which an organization provides external social benefits” (Burton Allen Weisbrod, 2009, p. 75). According to Kingma (1993) there is a causal relationship between how a nonprofit organization obtains its revenues and the public or private nature of its outputs. The percentage of an organization’s revenue in the form of particular types of revenue can be used as a proxy for the type of goods or services that an organization provides. Similar to Chang and Tuckman (1996), I
rely on the collectiveness index concept to calculate an index that determines where nonprofit organizations in each subsector lie on the spectrum of public to private goods. This index is constructed by using Tuckman and Chang’s formula for a “pure donative index.” The numerator of the index includes “direct contributions, gifts, and bequests plus indirect contributions from grant-making organizations such as United Way and Community Foundations (organizations themselves financed by donations)” (Chang & Tuckman, 1996) and total revenues as a denominator. I used the following formula to calculate the index:

\[
\frac{\text{Direct Contributions} + \text{Indirect Contributions}}{\text{Total Revenues}}
\]

Table 2.5 summarizes the donative index of the nine broad nonprofit sectors identified. In general, subsectors with a higher donative index provide more public goods/services while subsectors with a lower donative index provide more private goods/services. These calculations are based on the information from the Digitized files and represent the average for all nonprofit organizations included in the database for the period 1999 to 2003.

**Table 2.5. Donative Index by Broad NTEE Subsectors**

<table>
<thead>
<tr>
<th>Subsector</th>
<th>Pure Donative Index</th>
<th>Nature of Good</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mutual/Membership Benefit</td>
<td>27%</td>
<td>Private Goods</td>
</tr>
<tr>
<td>Education</td>
<td>35%</td>
<td></td>
</tr>
<tr>
<td>Health</td>
<td>39%</td>
<td></td>
</tr>
<tr>
<td>Human Services</td>
<td>45%</td>
<td></td>
</tr>
<tr>
<td>Arts, Culture, and Humanities</td>
<td>47%</td>
<td></td>
</tr>
<tr>
<td>Public, societal Benefits</td>
<td>54%</td>
<td></td>
</tr>
<tr>
<td>Environment and Animals</td>
<td>60%</td>
<td></td>
</tr>
<tr>
<td>Religion related</td>
<td>69%</td>
<td>Public Goods</td>
</tr>
<tr>
<td>International, Foreign Affairs</td>
<td>74%</td>
<td></td>
</tr>
</tbody>
</table>
2.9. Results

The dataset consists of a total of 45,642 observations of 22,821 nonprofit organizations. The descriptive statistics expose some interesting features of the data. First, notice the wide variation of the SAR variable. This provides further evidence that there are broad differences in how the revenues of individual nonprofit organizations were affected after the September 11 attacks. Notice also that the range of the three percentage revenues variables goes from 0 to 1 (0% to 100%); this is evidence of the wide variation of the sources from which nonprofit organizations get their revenues. The nonprofit organizations in the sample receive on average 38% of their revenues from program services, 23% from direct contributions, and 21% from government sources. Together, these three categories account for 83%, on average, of the total revenues of nonprofit organizations.

Table 2.6. Summary Descriptive Statistics

<table>
<thead>
<tr>
<th>Variable</th>
<th>Observations</th>
<th>Mean</th>
<th>Std. Dev.</th>
<th>Min</th>
<th>Max</th>
</tr>
</thead>
<tbody>
<tr>
<td>SAR*</td>
<td>45,642</td>
<td>0.23</td>
<td>0.20</td>
<td>-4.23</td>
<td>7.82</td>
</tr>
<tr>
<td>HHI **</td>
<td>45,642</td>
<td>0.65</td>
<td>0.23</td>
<td>0.15</td>
<td>1.00</td>
</tr>
<tr>
<td>% Government Revenues**</td>
<td>45,642</td>
<td>0.21</td>
<td>0.32</td>
<td>0.00</td>
<td>1.00</td>
</tr>
<tr>
<td>% Direct Contributions**</td>
<td>45,642</td>
<td>0.23</td>
<td>0.31</td>
<td>0.00</td>
<td>1.00</td>
</tr>
<tr>
<td>% Program Service**</td>
<td>45,642</td>
<td>0.38</td>
<td>0.38</td>
<td>0.00</td>
<td>1.00</td>
</tr>
<tr>
<td>2003 Dummy</td>
<td>45,642</td>
<td>0.50</td>
<td>0.50</td>
<td>0.00</td>
<td>1.00</td>
</tr>
<tr>
<td>Group Affiliation</td>
<td>45,642</td>
<td>0.04</td>
<td>0.19</td>
<td>0.00</td>
<td>1.00</td>
</tr>
<tr>
<td>Natural Log of Assets</td>
<td>45,490</td>
<td>14.53</td>
<td>2.05</td>
<td>3.58</td>
<td>24.86</td>
</tr>
</tbody>
</table>

* Winsorized 1%
** Lagged by 1 year

The correlation matrix of the variables included in the regressions shows that, overall, a higher percentage of direct contributions are negatively correlated with SAR, while higher percentages of government revenues and program services are positively correlated. Higher HHI,
that is, revenue concentration (less diversification) is positively correlated with SAR. Finally, the 2003 dummy is negatively correlated with SAR which suggests that the negative effect, if any, was stronger in 2003.

**Table 2.7. Correlation Matrix**

<table>
<thead>
<tr>
<th>Variable</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
</tr>
</thead>
<tbody>
<tr>
<td>SAR* (1)</td>
<td>1.000</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>HHI ** (2)</td>
<td>0.98</td>
<td>1.000</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>% Government Revenues** (3)</td>
<td>0.90</td>
<td>0.007</td>
<td>1.000</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>% Direct Contributions** (4)</td>
<td>0.124</td>
<td>0.096</td>
<td>0.307</td>
<td>1.000</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>% Program Service** (5)</td>
<td>0.092</td>
<td>0.326</td>
<td>0.424</td>
<td>0.507</td>
<td>1.000</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2003 Dummy (6)</td>
<td>0.014</td>
<td>0.036</td>
<td>0.020</td>
<td>0.005</td>
<td>0.030</td>
<td>1.000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Group Affiliation (7)</td>
<td>0.012</td>
<td>0.025</td>
<td>0.064</td>
<td>0.029</td>
<td>0.070</td>
<td>0.001</td>
<td>1.000</td>
<td></td>
</tr>
<tr>
<td>Natural Log of Assets (8)</td>
<td>0.060</td>
<td>0.018</td>
<td>0.143</td>
<td>0.073</td>
<td>0.200</td>
<td>0.009</td>
<td>0.087</td>
<td>1.000</td>
</tr>
</tbody>
</table>

* Winsorized 1%
** Lagged 1 year

Table 2.8 compares the results of three different estimation models: fixed effects, random effects, and pooled OLS. Notice that the sign and significance of the different coefficients are generally the same across the three models. The only noticeable exception is that the coefficient for percentage of direct support is significant and negative for the fixed effects and random effects regressions, while it is not significant for the pooled OLS regression. The consistency of the results of the three models suggests that the independent variables explain both within group variations and across group variations over the two impact years.

As referenced before, I ran tests that determined fixed effects to be the models more appropriate for the data. The very low r-squared of the regressions suggests that a significant part of the variation in SAR is not explained by the model. This is further proof that a fixed effects
model is more appropriate as the potential of omitted variable bias is addressed by including two-way fixed effects.

Overall, the results of the regression suggest that nonprofit organizations with more concentrated revenue structures, a higher percentage of government revenues and program service revenues, and a lower percentage of public support faced lower financial risks after the attacks. In addition, larger nonprofit organizations—measured in assets—also experienced lower financial risk. Finally, the affiliation variable was insignificant across the three regressions which suggests that being part of a network of nonprofit organizations has no effect on financial risk. I ran the regressions without the affiliation variable and the results for the other independent variables only changed minimally in magnitude.

Table 2.8. Fixed Effects, Random Effects, and Pooled OLS

<table>
<thead>
<tr>
<th></th>
<th>(1)</th>
<th>(2)</th>
<th>(3) Pooled OLS</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Fixed Effects</td>
<td>Random Effects</td>
<td>Pooled OLS</td>
</tr>
<tr>
<td>HHI lagged</td>
<td>0.305*</td>
<td>0.486***</td>
<td>0.504***</td>
</tr>
<tr>
<td></td>
<td>(0.169)</td>
<td>(0.049)</td>
<td>(0.049)</td>
</tr>
<tr>
<td>% Government Revenues</td>
<td>0.820***</td>
<td>0.857***</td>
<td>0.903***</td>
</tr>
<tr>
<td></td>
<td>(0.243)</td>
<td>(0.049)</td>
<td>(0.048)</td>
</tr>
<tr>
<td>% Direct Support</td>
<td>-1.833***</td>
<td>-0.154***</td>
<td>-0.0565</td>
</tr>
<tr>
<td></td>
<td>(0.210)</td>
<td>(0.053)</td>
<td>(0.052)</td>
</tr>
<tr>
<td>% Program Service</td>
<td>0.956***</td>
<td>0.590***</td>
<td>0.623***</td>
</tr>
<tr>
<td>Revenues</td>
<td>(0.244)</td>
<td>(0.048)</td>
<td>(0.047)</td>
</tr>
<tr>
<td>2003 (Dummy)</td>
<td>-0.115***</td>
<td>-0.0670***</td>
<td>-0.0672***</td>
</tr>
<tr>
<td></td>
<td>(0.016)</td>
<td>(0.015)</td>
<td>(0.015)</td>
</tr>
<tr>
<td>Group Affiliation</td>
<td>0.086</td>
<td>0.0559</td>
<td>0.0674</td>
</tr>
<tr>
<td></td>
<td>(0.173)</td>
<td>(0.053)</td>
<td>(0.054)</td>
</tr>
<tr>
<td>Natural Log of Assets</td>
<td>1.500***</td>
<td>0.0610***</td>
<td>0.0529***</td>
</tr>
<tr>
<td></td>
<td>(0.122)</td>
<td>(0.005)</td>
<td>(0.005)</td>
</tr>
<tr>
<td>Constant</td>
<td>-21.82***</td>
<td>-1.311***</td>
<td>-1.250***</td>
</tr>
<tr>
<td></td>
<td>(1.774)</td>
<td>(0.087)</td>
<td>(0.086)</td>
</tr>
<tr>
<td>N</td>
<td>45,490</td>
<td>45,490</td>
<td>45,490</td>
</tr>
</tbody>
</table>

Standard errors in parentheses; * p < 0.10, ** p < 0.05, *** p < 0.01
Table 2.9 displays the results of the fixed effects regression by subsector. The table includes the results for the nine different subsectors analyzed. As expected, the results vary considerably by subsectors which suggests that revenue mix is associated differently with financial risk depending on the subsector.

For example, the coefficient for HHI is significant at the .05 level for five of the nine subsectors; three of which have positive HHI coefficients (education, health, and human services) and three have negative HHI coefficients (arts culture and humanities, environment and animals, and international foreign affairs). This suggests that increasing revenue concentration reduces financial risk for some subsectors while revenue diversification is associated with lower financial risk for other subsectors. The financial risk faced by the remaining two subsectors (public societal benefits and religion related) is not associated with the level of concentration or diversification of their revenues. Note that it is possible that the nonprofit sectors that benefit from increasing their concentration in one revenue category might also benefit from diversification within that category. For example, an organization that benefits from concentration of government revenues, might benefit from diversification of those revenues by level of government (local, state, federal) or by program (e.g. grants, Medicaid, etc.).

The percentage of government revenues was positive and significant at the .05 level for two subsectors (education and human services) and positive and significant at the .05 level for five (arts culture and humanities, education, environment and animals, human services, and religion related). Notice that the human services and education subsectors also have positive and significant coefficients for the variable government revenue concentration, suggesting that organizations in these subsectors benefit from increasing their concentration of revenues from government sources.
Finally, the coefficient for percentage direct public support was negative and significant at the .05 level for five of the nine subsectors.

The group affiliation variable was positive and significant for two subsectors (public societal benefits and religion related) and negative and significant for one subsector (mutual/membership benefit). This variable was dropped from the regression of the environment and animals subsector because of collinearity. The size of the nonprofit organization was positive and significant at the .05 level for seven of the eight regressions which suggests that bigger organizations face lower financial risk.
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>HHI lagged</td>
<td>-2.503***</td>
<td>1.255***</td>
<td>-2.764***</td>
<td>1.252***</td>
<td>0.545***</td>
<td>-2.574***</td>
<td>1.971</td>
<td>-0.258</td>
<td>1.3</td>
</tr>
<tr>
<td></td>
<td>(0.582)</td>
<td>(0.318)</td>
<td>(0.928)</td>
<td>(0.311)</td>
<td>(0.265)</td>
<td>(1.173)</td>
<td>(2.272)</td>
<td>(0.585)</td>
<td>(1.037)</td>
</tr>
<tr>
<td>% Government revenues</td>
<td>0.0309</td>
<td>1.677***</td>
<td>-0.263</td>
<td>0.689</td>
<td>0.883***</td>
<td>-0.282</td>
<td>-0.102***</td>
<td>-0.333</td>
<td>3.481</td>
</tr>
<tr>
<td></td>
<td>(0.840)</td>
<td>(1.489)</td>
<td>(0.515)</td>
<td>(0.515)</td>
<td>(0.397)</td>
<td>(2.148)</td>
<td>(7.053)</td>
<td>(0.747)</td>
<td>(2.477)</td>
</tr>
<tr>
<td>% Direct support</td>
<td>-0.99</td>
<td>-2.672***</td>
<td>-1.917***</td>
<td>-1.646***</td>
<td>-1.631***</td>
<td>-0.888</td>
<td>0.196</td>
<td>-1.806***</td>
<td>-0.588</td>
</tr>
<tr>
<td></td>
<td>(0.974)</td>
<td>(0.481)</td>
<td>(0.877)</td>
<td>(0.421)</td>
<td>(0.375)</td>
<td>(1.323)</td>
<td>(4.775)</td>
<td>(0.534)</td>
<td>(1.310)</td>
</tr>
<tr>
<td>% Program service revenues</td>
<td>3.440***</td>
<td>1.698**</td>
<td>3.506***</td>
<td>0.394</td>
<td>0.851**</td>
<td>1.783</td>
<td>0.31</td>
<td>0.243</td>
<td>3.338***</td>
</tr>
<tr>
<td></td>
<td>(0.913)</td>
<td>(1.360)</td>
<td>(0.513)</td>
<td>(0.399)</td>
<td>(1.620)</td>
<td>(1.773)</td>
<td>(0.766)</td>
<td>(1.865)</td>
<td></td>
</tr>
<tr>
<td>2003 (dummy)</td>
<td>-0.206***</td>
<td>-0.00777</td>
<td>-0.00834</td>
<td>-0.0746**</td>
<td>-0.152**</td>
<td>0.230**</td>
<td>0.182</td>
<td>-0.214***</td>
<td>-0.178**</td>
</tr>
<tr>
<td></td>
<td>(0.053)</td>
<td>(0.050)</td>
<td>(0.105)</td>
<td>(0.031)</td>
<td>(0.025)</td>
<td>(0.118)</td>
<td>(0.617)</td>
<td>(0.054)</td>
<td>(0.095)</td>
</tr>
<tr>
<td>Group Affiliation</td>
<td>0.0263</td>
<td>-0.643</td>
<td>0.152</td>
<td>0.00408</td>
<td>0.717*</td>
<td>-6.113**</td>
<td>1.160**</td>
<td>0.744***</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.341)</td>
<td>(0.739)</td>
<td>(0.273)</td>
<td>(0.268)</td>
<td>(0.431)</td>
<td>(0.915)</td>
<td>(0.421)</td>
<td>(0.227)</td>
<td></td>
</tr>
<tr>
<td>Natural Log of Assets</td>
<td>1.999***</td>
<td>1.394***</td>
<td>2.470***</td>
<td>1.238***</td>
<td>1.442***</td>
<td>1.154***</td>
<td>-1.3//</td>
<td>2.073***</td>
<td>1.052***</td>
</tr>
<tr>
<td></td>
<td>(0.231)</td>
<td>(0.334)</td>
<td>(0.715)</td>
<td>(0.220)</td>
<td>(0.238)</td>
<td>(0.343)</td>
<td>(2.121)</td>
<td>(0.225)</td>
<td>(0.377)</td>
</tr>
<tr>
<td></td>
<td>(3.299)</td>
<td>(3.075)</td>
<td>(10.230)</td>
<td>(3.387)</td>
<td>(3.390)</td>
<td>(5.088)</td>
<td>(32.100)</td>
<td>(3.255)</td>
<td>(2.294)</td>
</tr>
</tbody>
</table>

N: 7,999

Standard errors in parentheses
* p < 0.10, ** p < 0.05, *** p < 0.01
Table 2.10 displays the results of the nine subsector regressions excluding HHI. As discussed before, this measure of revenue diversification/concentration has some shortcomings that can potentially introduce bias to the regressions. For this reason, I tested the model without this variable to determine if the results differed significantly. Overall, the results of these regressions only vary minimally when compared to the results of the regressions including HHI. The only differences are that the direct public support percentage coefficient is negative and significant for two additional subsectors (arts culture and humanities, and international foreign affairs) and the program service percentage coefficient is not significant for the environment and animals subsector.
Table 2.10. Fixed Effects Regression by Broad Subsector (no HHI)

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>% Government revenues</td>
<td>-0.509</td>
<td>2.163***</td>
<td>-0.879</td>
<td>0.885*</td>
<td>1.019***</td>
<td>-1.468</td>
<td>-27.15***</td>
<td>-0.816</td>
<td>3.456</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.837)</td>
<td>(0.676)</td>
<td>(1.509)</td>
<td>(0.518)</td>
<td>(0.387)</td>
<td>(2.024)</td>
<td>(7.049)</td>
<td>(0.757)</td>
<td>(2.455)</td>
<td></td>
</tr>
<tr>
<td>% Direct support</td>
<td>-2.024***</td>
<td>-2.249***</td>
<td>-3.388***</td>
<td>-1.259***</td>
<td>-1.497***</td>
<td>-2.755**</td>
<td>-0.579</td>
<td>-1.887***</td>
<td>-0.13</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.745)</td>
<td>(0.483)</td>
<td>(0.832)</td>
<td>(0.425)</td>
<td>(0.369)</td>
<td>(1.333)</td>
<td>(5.086)</td>
<td>(0.546)</td>
<td>(1.211)</td>
<td></td>
</tr>
<tr>
<td>% Program Service revenues</td>
<td>2.715***</td>
<td>2.362***</td>
<td>2.592</td>
<td>0.905</td>
<td>1.068***</td>
<td>0.392</td>
<td>0.0216</td>
<td>-0.328</td>
<td>3.749***</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.502)</td>
<td>(0.625)</td>
<td>(1.362)</td>
<td>(0.511)</td>
<td>(0.381)</td>
<td>(1.628)</td>
<td>(1.353)</td>
<td>(0.769)</td>
<td>(1.861)</td>
<td></td>
</tr>
<tr>
<td>2003 (dummy)</td>
<td>-0.230***</td>
<td>0.0131</td>
<td>-0.00657</td>
<td>-0.063***</td>
<td>-0.146***</td>
<td>0.226</td>
<td>0.279</td>
<td>-0.216***</td>
<td>-0.169</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.054)</td>
<td>(0.050)</td>
<td>(0.105)</td>
<td>(0.051)</td>
<td>(0.022)</td>
<td>(0.119)</td>
<td>(0.572)</td>
<td>(0.054)</td>
<td>(0.095)</td>
<td></td>
</tr>
<tr>
<td>Group Affiliation</td>
<td>0.0707</td>
<td>-0.665</td>
<td>-0.142</td>
<td>0.00694</td>
<td>0.586</td>
<td>-5.006***</td>
<td>1.159***</td>
<td>0.775***</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.439)</td>
<td>(0.790)</td>
<td>(0.281)</td>
<td>(0.269)</td>
<td>(0.388)</td>
<td>(0.904)</td>
<td>(0.423)</td>
<td>(0.228)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Natural Log of Assets</td>
<td>1.991***</td>
<td>1.389***</td>
<td>2.522***</td>
<td>1.246***</td>
<td>1.438***</td>
<td>1.230***</td>
<td>-1.335</td>
<td>2.078***</td>
<td>1.067***</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.231)</td>
<td>(0.336)</td>
<td>(0.700)</td>
<td>(0.219)</td>
<td>(0.251)</td>
<td>(0.345)</td>
<td>(2.101)</td>
<td>(0.224)</td>
<td>(0.377)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(3.315)</td>
<td>(5.112)</td>
<td>(10.010)</td>
<td>(3.374)</td>
<td>(3.387)</td>
<td>(5.072)</td>
<td>(31.930)</td>
<td>(3.234)</td>
<td>(5.289)</td>
<td></td>
</tr>
</tbody>
</table>

N = 3799  4726  1184  10737  19094  648  75  4151  1076

Standard errors in parentheses
* p < 0.10, ** p < 0.05, *** p < 0.01
2.10. Discussion

Overall, the results of the analyses suggest that there is no one revenue mix that reduces financial risk for all nonprofit organizations after an unexpected event. That is, there is no one-size-fits-all combination of revenues that all nonprofit organizations can adopt to reduce event risk. However, the results also suggest that there are some revenue strategies that are preferable for most subsectors and some revenue strategies that only appear to work for particular subsectors. In addition, the results provide some support to the benefits theory of nonprofit finance as the results vary by the nature of the good/services provided by the nonprofit organizations.

For example, the results of the regressions suggest that neither diversification of revenues in various sources nor concentration of revenue in few sources reduces financial risk after an unexpected event for all organizations. In this respect, hypothesis number one was supported only for some subsectors. The importance of the degree of revenue concentration/diversification appears to be related to the nature of the goods provided. Nonprofit organizations that provide goods and services that—according to the donative index presented in Table 2.5—are more private in nature benefit from revenue concentration in few sources. Nonprofit organizations in subsectors such as education, health, and human services benefit from concentrating their revenues in few sources, arguably because they have a hard time obtaining revenues from diverse sources due to the private nature of the goods provided. That is, they might find more difficulties earning income from contributions because the public might be reluctant to contribute for causes where the benefits are private. Note that these sectors have traditionally received considerable funding from government and that government revenues are often more predictable and stable (Froelich, 1999). Mutual and membership benefits organizations are an exception to this tendency and should be subject to further analysis.
In contrast, the relationship between revenue diversification and public goods and services is not as clear. Some organizations with a higher donative index such as international, foreign affairs, and environment and animals benefit from more diversified revenues. However, the results for other organizations with high donative index (e.g. religion related organizations) do not suggest any relationship between revenue diversification and event risk. The results for the arts, culture, and humanities subsector are consistent with Hager (2001) who found that certain nonprofit organizations in the arts subsector benefit from revenue diversification as they are less likely to disappear over time if they have diversified revenues.

The results for the direct support percentage variable also provide some support for the benefits theory of nonprofit finance. With the exception of mutual/membership benefit organizations, all the other subsectors with a low donative index experience higher event risk when their revenues are comprised of a higher percentage of revenues from direct support. On the other hand, the two organizations with the higher donative index are the only ones (besides mutual/membership benefit) that do not show the same significant negative relationship between percentage direct support and the event risk variable. The overall results for this variable suggest that relying on direct support revenues is a risky strategy for nonprofits that provide private goods and services and that it does not make a difference for nonprofit organizations that provide public goods and services. This finding is consistent with Froelich's (1999) characterization of direct support revenues as an unpredictable and highly volatile revenue source.

The coefficient results for the program services percentage variable does not appear to be related with the nature of the goods and services provided by any given nonprofit organization. Some organizations with high pure donative indexes, such as environment and animals and religion related, find it beneficial to rely on higher proportions of program services revenue, while
organizations with lower pure donative indexes such as mutual/membership benefit and education don’t appear to realize the same benefits from a higher program services percentage. This suggests that, independently of the nature of the goods and services provided, nonprofit organizations can potentially benefit from commercial sources of income.

The regression results for the percentage of government revenue were unexpected for certain subsectors. On one hand, the positive coefficient for the human services sector was an expected result and is consistent with previous research that has found that nonprofit organizations in the human services subsector with higher a concentration of government sources are more stable financially and grow faster (Grønbjerg, 1993; Kingma, 1993). However, the results of the percentage of government revenue coefficient for some subsectors were unexpected. For example, the absence of a positive coefficient for the percentage government revenue variable was unexpected because many health organizations rely on government sources such as Medicare/Medicaid which is generally a stable source. This result might be explained by the underreporting of this revenue as it possible that not all nonprofit organizations report the disaggregated Medicare/Medicaid revenue information on Form 990. When reported, I subtracted the information from the program services revenue to calculate the government revenues. The negative coefficient for the mutual membership benefit organizations is difficult to interpret due to the limited knowledge of these organizations and requires a more in-depth analysis of how these organizations work.

Finally, the group affiliation variable suggests that nonprofit organizations in the public, societal benefits subsector and the religion related subsector benefit from being part of a network of affiliated nonprofit organizations. It is uncertain why only these subsectors have significant results and warrant further analysis. Note that these results do not prove nor contradict the findings
of Derryck & Abzug (2002) because their findings were specific to nonprofit organizations in New York City that were located in the proximity of the site of the September 11 attacks while this analysis is based on a much broader sample of nonprofit organizations.

2.11. Limitations

The overall results of the analyses presented in this essay should be interpreted with care. As noted before, the sample used for the analyses limits the generalizability of the results because young and small nonprofit organizations were dropped from the analyses at a higher rate due to inconsistencies in the data or failure to file a report for every year. In addition, as indicated before, the low r-square values for the regressions shows that the model explains just a very small part of the variance of the event risk variable. This suggests that the revenue mix of nonprofit organizations is not as important for explaining revenue changes after a disruptive event as initially hypothesized. Thus, further research is needed to identify other factors that explain the variability of the risk variable.

A plausible explanation for the low explanatory power of the models may have to do with the nature of the data. The information obtained from Form 990 might not include the level of disaggregated information to perform these types of analyses. Some key variables included in the analyses include many revenue sources that can vary substantially in their behavior. For example, program service revenue includes many different sources of revenue that nonprofit organizations earn from the different programs they offer, with some of them more or less volatile than others. The explanatory power of the model could potentially increase if the database was constructed with information from annual financial audits that generally include better detail about the sources of revenue. However, financial audits of nonprofit organizations are not readily available and it
would be practically impossible to collect a sample of nonprofit financial audits comparable in size and length to Form 990 data available.

Another plausible explanation for the low explanatory power of the models is related with the subsector disaggregation. In this essay I divided the nonprofit sector into nine different subsectors according to their NCCS classification and calculated the pure donative index for each subsector as a proxy for the nature of the goods provided. A problem with this approach is that there are variations within these subsectors and the donative index for particular organizations even within a subsector can vary substantially. For example, Hager (2010) showed for the arts organizations subsector, there is great variability within subsectors. Future research can focus on particular subsectors and disaggregate the analysis by smaller categories within specific subsectors. Finally, the disaggregated revenue data reported on Form 990 that I used for this analysis presents additional challenges to the measurement of diversification that may have also negatively affected the explanatory power of the models. This issue can potentially be addressed by relying on information of audited financial statements rather than on information from the 990 forms.

Two independent variables missing from the models that can potentially increase the overall explanatory power are reliance on investment income and proximity to the unexpected event. Regarding the reliance of investment income, I included this variable in early iterations of the model but, due to inconsistent reporting of the different components of investment income in the Form 990, the results were unstable and I opted to remove the variable from the models. The inclusion of a reliable value for investment income is likely to affect the results for some of the subsectors that rely heavily on this income. The inclusion of the proximity to the event variable would require relying on spatial analyses methods that go beyond the intent of this essay, but can
potentially add explanatory power to the analysis by exploring the geographic dimensions of event risk.

Finally, the analyses ran for this chapter are limited to examining the abnormal revenues two years after the terrorist attacks because I wanted to determine whether nonprofit organization revenues changed after the attacks. Because there is a lot of volatility in the revenues of nonprofit organizations it is not clear whether the years examined are really abnormal or similar to other groups of two years. A way to examine in future research whether this is the case is to perform the similar analyses for other sets of out of sample predictions and compare the results.

2.12. Conclusion

The benefits theory of nonprofit finance states that there is a relationship between the nature of the goods and/or services provided by nonprofit organizations and the sources from where the organization obtains its revenues. Under this premise, some types of income are more appropriate for particular types of nonprofit organizations. The results of this essay provide some support to this theory and go a step forward to suggest that nonprofit organizations with a better match between the nature of the types of goods and/or services provided and the revenue source can experience lesser financial risks after an unexpected event.

The results of this essay also suggest a relationship between revenue diversification and revenue concentration strategies and the types of goods and/or services provided. Nonprofit organizations that provide private goods and/or services appear to benefit from revenue concentration strategies as a way to reduce financial risk. To a lesser extent, nonprofit organizations that provide more public goods and/or services benefit from revenue diversification strategies.
However, the results of the analyses do not always provide support to the postulates of the benefits theory of nonprofit finance. None of the nine subsectors examined reduced the financial risk with higher percentages of contributions from the public, not even the sectors that were identified as mostly providers of public services/goods. Despite not being completely consistent with the benefits theory of nonprofit finance, this result was not entirely unexpected. Private contributions is a highly volatile revenue source (Froelich, 1999) and the results suggest that it is sensitive to unexpected events independently from the nature of the goods and services provided by the organization.

In some cases, nonprofit organizations may find that attracting revenue sources that don’t necessarily match with the types of goods and/or services primarily provided can reduce financial risk. For example, nonprofit organizations that rely on contributions from the public can reduce the risk of experiencing a financial shock by diversifying their revenue sources. In particular, seeking program service revenue appears to be a viable alternative to reduce the risk associated with a highly volatile revenue source such as contributions from the public. However, it is worth reiterating that all revenue sources are not necessarily available to every organization. Nonprofit organizations can’t necessarily choose the types of revenues earned. Depending on the nature of the goods/services provided by a nonprofit organizations some types of revenues might not be readily available and might require the organization to consider providing different goods/services.

While the benefits theory of nonprofit finance is still a young theory, the results of this essay suggest that it has the potential to help us better understand the finances of the nonprofit sector. The diverse sources of revenue available to nonprofit organizations makes the nonprofit sector different from the public and for-profit sector and the benefits theory of nonprofit finance has the potential to capture this diversity by incorporating to the analysis the nature of the
goods/services provided by nonprofit organizations. It is reassuring to experience the progress of the study of nonprofit finance and to be part of the development of a theory of finance that the nonprofit sector can call its own.

Finally, exploring the revenue disruptions experienced by nonprofit organizations after a disrupting event is only part of the question of how nonprofit organizations were affected after the September 11 attacks. Another related, and perhaps more important, question is determining how nonprofit organizations reacted to revenue disruptions. While in this essay I assessed the statistical significance of the revenue impact after the September 11 attacks, statistical significance doesn’t necessarily correspond to managerial significance. That is, a statistically significant impact of the attacks on the revenues of nonprofit organizations does not necessarily translate to lower levels of goods/services delivery. Were their operations affected by the revenue changes? Did they reduce their expenses and level of program service delivery? I explore these important questions in the third chapter of this dissertation.

2.13 References


Chapter 3: Avoiding Service Cutbacks in Times of Crisis: Nonprofit Financial Vulnerability Following September 11

3.1. Introduction

The first essay of this dissertation (Chapter 2) identified organizations that experienced abnormal and statistically significant revenue disruptions after the September 11 attacks. This essay takes an additional step by acknowledging that, from a management perspective, statistical significance can be arbitrary (McCloskey, 1998) and revenue disruptions are only practically significant for a nonprofit organization when day-to-day operations are affected (Guerrero & Purtell, 2011). While the first essay explored how nonprofit organizations’ revenues were affected after the September 11 attacks and identified characteristics of the revenue portfolio on nonprofit organizations that mediated the impact, this second essay focuses on how the expenses of nonprofit organizations changed.

Revenue disruptions are a sign of concern for any organization. However, in the nonprofit sector reductions in revenue become more meaningful when they result in program and service cutbacks because they can directly affect an organization’s effectiveness in accomplishing its mission. Revenue reductions that do not impact the levels of program and service delivery, although a matter of concern from a management perspective, do not necessarily represent a critical issue. This essay also relies on information extracted from the 990 forms and explores the effect of revenue disruptions on the operations of nonprofit organizations. The analyses presented in this essay identify different financial and organizational characteristics of nonprofit organizations that experienced revenue declines that might have prevented them from cutting back on their operations..
Research on “nonprofit financial vulnerability” (Chang & Tuckman, 1991; Hager, 2001; Keating, Fischer, Gordon, & Greenlee, 2005; Trussel, 2003) offers a theoretical framework to address this important issue. While nonprofit financial vulnerability research has focused on the use of financial ratios to predict financial problems (Greenlee & Tuckman, 2007), the financial vulnerability theories can also be useful for identifying the characteristics of organizations that are more resistant to financial shocks. The overall results of the empirical analyses presented in this essay add evidence to the explanatory power of the determinants of nonprofit financial vulnerability proposed by the theory: organizations with higher operating margins, more accumulated net assets, and lower debt ratios were more likely to absorb the reduction in revenues experienced after September 11 and prevent disruptions to their operations.

Although the empirical tests in this essay focus on the two years that followed the September 11 attacks, the results are meant to shed light on how nonprofit organizations can face situations when revenues are reduced and still manage to maintain stable levels of service and program delivery. I address the question of whether organizations that experience revenue shocks react to them by cutting back services. I also identify characteristics that make nonprofit organizations that experienced a shock less likely to reduce their service offerings.

The remainder of this paper is organized as follows: I start by introducing the concept of nonprofit financial vulnerability and discuss the various determinants of nonprofit financial vulnerability proposed in the literature and formulate the hypotheses to be tested. I then present the data, methodology and results of the analyses. I conclude the essay by discussing the practical implications of the analyses and the limitations of the study.
3.2. What is Nonprofit Financial Vulnerability?

The theoretical underpinnings for the study of nonprofit financial vulnerability were introduced by Tuckman and Chang in their 1991 seminal paper “A methodology for measuring the financial vulnerability of charitable nonprofit organizations” (Tuckman & Chang, 1991). They defined a financially vulnerable organization as one that “is likely to cut back its service offerings immediately when it experiences a financial shock” (Tuckman & Chang, 1991, p. 445). Notice that this definition of financial vulnerability considers a “cutback” of services as an integral part of the definition. Similarly, Lane (2006) refers to nonprofit organizations in financial distress as those that see their program and service delivery affected by a disparity between revenues and expenses. Financially vulnerable organizations are more likely to cut back services after experiencing revenue declines that follow an unexpected event.

Operationalizing what constitutes a financially vulnerable organization has proved to be one of the major obstacles for advancing the nonprofit financial vulnerability literature. Greenlee and Trussel (2000) were the first ones to revisit Tuckman and Chang’s theory and proposed an operationalization of the nonprofit financial vulnerability concept. Their operationalization of nonprofit financial vulnerability adapts financial vulnerability definitions used in the for-profit sector and focuses on the “cutback in programs or services” component of the initial definition. According to Greenlee and Trussel (2000), one operational definition of financial vulnerability used in the corporate finance literature asserts that a for-profit organization is financially vulnerable when it experiences three consecutive years of decreases in their income. Greenlee and Trussel (2000) adapt this definition to fit the information available for the nonprofit sector by characterizing financially vulnerable nonprofit organizations as those that experience reductions in program expenses for three consecutive years. This approach falls short of explaining why three
consecutive years constitute the threshold for determining which organizations are financially vulnerable. Another limitation of this approach is that it doesn’t distinguish between different levels of program expense reductions. For example, a 5% reduction in program expenses is expected to have a very different effect on operations than a 25% reduction in program expenses and this approach fails to recognize these differences.

Trussel (2002) revisited the financial vulnerability operationalization two years after his first study, this time focusing on fund balance reductions rather than program expense reductions as the key characteristic of a financially vulnerable organization. Trussel revised their definition of a financially vulnerable organization as one that has at least a 20% reduction in its fund balances for three consecutive years (Trussel, 2002). However, this alternative definition of financial vulnerability fails to establish how fund balance reductions are related to service cutbacks, an integral part of the original definition of financial vulnerability. An organization may experience reductions in its fund balances for three consecutive years and still maintain a stable level of services. Contrary to Greenlee and Trussel’s (2000) initial operationalization which focused only on the “service cutbacks,” this new operationalization focuses only on the “financial shock” as it includes organizations that reduced their fund balances by at least 20% for three consecutive years. For Tuckman and Chang, financially vulnerable nonprofit organizations are those which cut back on services when experiencing a financial shock. An accurate operationalization of financial vulnerability needs to capture both the “service cutback” and the “financial shock” components of the definition.

Greenlee and Trussel’s (2000) approach has at least two additional limitations. First, they fail to justify why a 20% reduction in fund balance is the threshold to distinguish financially vulnerable nonprofit organizations from organizations that are not financially vulnerable. Second,
their definition fails to identify organizations that experience small reductions in their net assets for several years. Nonprofit organizations can experience several consecutive years of deficits which can erode net assets and make an organization financially vulnerable.

In his study of financial vulnerability among arts organizations, Hager takes a different approach and operationalizes financially vulnerable organizations as those that “fail the ultimate test of simple persistence” (Hager, 2001, p. 382). This operationalization of financial vulnerability is derived from an area of corporate finance literature that places special attention on financial ratios that predict bankruptcy (see Altman, 1968; Ohlson, 1980). Exploring the predictors of bankruptcy in the nonprofit sector is less relevant because few nonprofits actually declare bankruptcy. It is common for nonprofit organizations facing financial struggle to cease operations and disappear without declaring bankruptcy or merge with other organizations as an attempt to survive (Hager, Galaskiewicz, Bielefeld, & Pins, 1996). Running analyses that include only nonprofit organizations that filed for bankruptcy can be misleading because this type of analysis is likely to exclude nonprofit organizations experiencing dire financial risk that simply opt to disappear or merge rather than going through bankruptcy procedures (Keating et al., 2005).

Rather than studying organizations that filed for bankruptcy, Hager(2001) studies organizations that are defunct—those that fail to report to the IRS for four consecutive years—and characterizes them as financially vulnerable. The problem with this operationalization of financially vulnerable organizations is that it is excessively restrictive, excluding from consideration those organizations that may be at financial risk and experience service cutbacks but still manage to survive and deliver services at reduced levels.
A more recent study on nonprofit financial vulnerability (Keating et al., 2005), avoids operationalizing the concept in one dimension and instead relies on four different measures of “dramatic adverse shifts in financial health, all which relate to the ability of a nonprofit organization to carry out its mission” (Keating et al., 2005, p. 11). The four dimensions proposed are: insolvency (negative net assets), financial disruption (at least 25% decline in net assets), funding disruption (at least 25% decline in total revenue) and program disruption (at least 25% decline in program expenses). The study then tests these four dimensions independently. The inclusion of these dimensions in separate regressions is problematic because it doesn’t take into account correlations between the different dimensions. For instance, an organization may experience financial or funding disruptions and still maintain its level of services and carry out its mission. In addition—and similar to previous approaches—this operationalization arbitrarily sets thresholds for distinguishing between organizations that are financially vulnerable from organizations that are not financially vulnerable. The overall results of the analyses are dependent on how financial vulnerability is operationalized and are likely to change depending on the thresholds set to identify financially vulnerable organizations.

Table 3.1 summarizes the different ways financial vulnerability has been operationalized in the research of nonprofit financial vulnerability.
Table 3.1. Definitions of Financial Vulnerability

<table>
<thead>
<tr>
<th>Definition</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Decline in program expenses for three consecutive years</td>
<td>(Greenlee &amp; Trussel, 2000)</td>
</tr>
<tr>
<td>20% reduction in net assets for three years</td>
<td>(Trussel 2002)</td>
</tr>
<tr>
<td>Closure of organization (4 consecutive years of not reporting to IRS)</td>
<td>(Hager, 2001)</td>
</tr>
<tr>
<td>Negative net assets</td>
<td></td>
</tr>
<tr>
<td>25% decline in net assets</td>
<td>(Keating et al., 2005)</td>
</tr>
<tr>
<td>25% decline in total revenue</td>
<td></td>
</tr>
<tr>
<td>25% decline in program expense</td>
<td></td>
</tr>
</tbody>
</table>

Although conceptually sound, Tuckman and Chang’s definition of nonprofit vulnerability has not been fully operationalized (Hager, 2001). As noted, previous research has focused on either the cutback in programs or services component of the definition or the financial shock component. Without an operationalization that fully encompasses the definition of financial vulnerability it is impossible to empirically test the different assumptions of the theory.

This study attempts to overcome the problems of previous operationalization in two ways. First, it takes into consideration both components of the definition of financial vulnerability: financial shock and service cutback. I do this by estimating a measure of service cutbacks that incorporates historical expenses as a proxy of level of service delivery. Second, I avoid arbitrarily setting a threshold level for determining whether a nonprofit organization is financially vulnerable. Instead, I include in the analyses an estimation of the abnormal revenues and abnormal expenses experienced by each organization after the attacks. These estimates incorporate at least 10 years
of historical data of each organization and measure the extent to which the changes in revenues/expenses after the attacks are within an organization’s normal year-to-year changes or represent an abnormal deviation.

3.3. Determinants of Nonprofit Financial Vulnerability

Despite differences in the definition of nonprofit financial vulnerability, there is some consensus regarding what are its determinants. The determinants of financial vulnerability are derived from assumptions about the options to replace lost revenues that are available to managers of organizations that experience a financial shock and do not want to cut back on service and program delivery. In general, organizations that experience revenue reductions can use the resources needed to avoid cutting programs/services from any remaining current profit after the revenue reduction, from their accumulated net assets, or even by borrowing. In addition, they also have the option to increase operational efficiency so that they can do the same with less revenues (Chang & Tuckman, 1991; Trussel, 2002).

Figure 3.1 portrays the basic concepts behind the nonprofit financial vulnerability theory. When an organization experiences a financial shock (i.e. reduction in revenues), those who manage the organization face the challenge of identifying resources to avoid cutbacks on service/program delivery. The determinants of nonprofit financial vulnerability are meant to assess whether those options are viable. Financial ratios are used to determine whether an organization’s finances provide enough flexibility to replace revenues after a financial shock.
3.3.1. Use Current Revenues

Current expenses incurred by an organization are often funded by the revenues earned during the current year. This is evidenced by the budgeting process when organizations create their yearly budgets by considering the revenues and expenses for the corresponding year (Finkler et al., 2012). However, organizations can also fund current operations from other sources such as savings from previous years and/or debt. To the extent that an organization does not have flexibility to replace the resources lost due to a reduction in revenues, reductions in current revenues are expected to lead to reductions of expenses which are likely to result in service and program delivery cutbacks.

H1: As revenues shocks experienced by a nonprofit organization increase in their severity, the size of program/service cuts also increases

However, not all reductions in revenue necessarily affect the level of services. Organizations that generally have large annual surpluses are in better shape when facing a financial shock as they can draw from their current revenues before having to reduce expenses and still be in a position to maintain stable levels of service delivery (Chang & Tuckman, 1991). This is reflected by high operating margins. Organizations that generally operate with high operating margins can experience revenue reductions and still have enough current financial resources to
cover the same level of expenses necessary to avoid service/program cutbacks. On the other hand, organizations with deficits do not earn enough revenues to cover their expenses, which is more likely to result in program service cutbacks.

**H2:** *Nonprofit organizations with larger operating margins make smaller cuts to their programs/services following a revenue shock*

Nonprofit financial vulnerability literature also associates revenue diversification with lower levels of financial vulnerability (Chang & Tuckman, 1991). As discussed in the previous essay, revenue diversification reduces financial vulnerability because diversification gives more options to nonprofit organizations to replace lost revenues. Nonprofit organizations with more diversified revenues do not rely on few sources of revenue and are less likely to suffer if a revenue source is disrupted because they have alternative sources of revenues to replace the lost revenue. I purposely excluded revenue diversification from the analyses of this chapter because the variables included are meant to explore how nonprofit organizations can avoid program service cutbacks after experiencing a reduction in their total revenues, not to explore why the reduction happened in the first place.

**3.3.2. Use Unrestricted Net Assets**

Another way for a nonprofit organization manager to overcome a financial shock is to pull from the organization’s net assets which are the historical accumulated surpluses from the operation of a nonprofit organization (Finkler et al., 2012). Organizations with larger net asset balances can pull from their previous years’ net assets to replace the reduced revenues and maintain a stable level of service delivery (Tuckman & Chang, 1991). Managers may choose to accumulate net assets to hedge against uncertainty and have them available to use them as a “rainy day fund”
when the organization is struggling financially. However, net assets may not be readily available to use because they have temporary/permanent restrictions set by donors (Finkler et al., 2012). Unrestricted net assets are the net assets of a nonprofit organization that has no such restrictions and therefore are available to the organization to use at its will. However, unrestricted net assets may not always be readily available to an organization because they can be held in illiquid assets (e.g. invested in property, plant and equipment).

Research on nonprofit financial vulnerability has consistently found that higher net asset balances are associated with lower financial vulnerability (Greenlee & Trussel, 2000; Hager, 2001; Trussel, 2002). However, while nonprofit financial vulnerability research suggests that higher levels of net asset accumulation are associated with lower financial vulnerability, it does not provide any evidence to support the hypothesis that managers choose to retain net assets for this reason. Calabrese (2011c) provides some evidence to support this hypothesis in certain nonprofit sectors. He examines the relationship between two of the nonprofit financial vulnerability indicators and the accumulation of net assets. Two of the financial vulnerability ratios (revenue concentration and fixed costs) are positively and significantly related to the unrestricted net assets for some subsectors. These results suggest that some organizations accumulate net assets to reduce financial vulnerability.

Note that reducing financial vulnerability is only one of the many reasons why managers of nonprofit organizations choose to accumulate net assets. Tuckman and Chang (1992) propose five different indirect ways that managers can benefit from the accumulation of net assets: as a source of subsidy, as a facilitator of allocations to the future, as a hedge against uncertainty, as a means to increase independence from the market place, and as a measure of financial success. Excessive accumulation of net assets can be a sign of agency problems because the purpose of
nonprofit organizations is to maximize their mission, not to maximize their wealth. While some managers may be inclined to increase their organization’s net assets in the organizations to prove that they are successful managers, this may not be in the best interest of the organization. Accumulating net assets in excess of what is needed is contrary to the purpose of the organization, as the profits accumulated could potentially be invested in the organization’s mission rather than be accumulated.

Finally, organizations with negative net asset balances are, by definition, insolvent (Bowman, 2011). This is because “an insolvent organization is one that is unable to pay its debts as they become due, which would necessarily impact its ability to provide services” (Keating et al., 2005, p. 11). For this reason, organizations with negative net asset balances are expected to be more financially vulnerable.

**H3: Nonprofit organizations with higher unrestricted net asset balances make smaller cuts to their programs/services following a financial shock**

### 3.3.3. Increase Operational Efficiency

Research on the finances of nonprofit organizations has frequently measured efficiency by using the proportion of total expenses that the organization directs to program service (see for example Frumkin & Kim, 2001; Marudas, 2004; Parsons, 2003). Nonprofit organizations that proportionally spend more on administration are considered less efficient because, instead of spending on administration, they could be allocating more resources to programs and services.

This simplistic approach to efficiency in the nonprofit sector has been rightfully criticized, mainly because efficiency is strictly a ratio of input to output and this definition doesn’t incorporate input and output measures (Tinkelman & Donabedian, 2007). The use of efficiency ratio has led
to unintended results such as organizations misreporting functional expenses to appear to operate more efficiently and attract more contributions (Trussel, 2003), or cuts in vital administrative services (Hager, 2004). The focus on this efficiency measure as a way to evaluate nonprofit organizations can lead to a starvation cycle, which is a cycle that makes nonprofit organizations invest so little on infrastructure that they can’t effectively function as organizations (Gregory & Howard, 2009; Lecy & Searing, 2015). The incentives to keep low overhead can result in underinvestment in the organizational infrastructure (accounting, information technology, human resources, etc.) necessary for an organization to be effective (Hager, 2004). The undesired result “is an underdeveloped nonprofit sector and a loss of community trust and confidence in philanthropy” (Hager, 2004, p.4). In addition, other studies suggest managers misclassify functional expenses, underreport administrative and fundraising expenses, and over-report program service expenses so that the nonprofit organization has a better efficiency ratio (Krishnan, Yetman, & Yetman, 2006; Trussel, 2003).

The financial vulnerability literature approaches efficiency from a different perspective, one in which higher administrative costs are not necessarily a red flag. From the perspective of the financial vulnerability theory, higher administrative costs can provide nonprofit organizations some flexibility because in the event of a financial shock an organization can opt to reduce some of its non-program related costs (e.g. support center costs) to maintain a desirable level of services (Tuckman & Chang, 1991).

Research on nonprofit finances also associates high administrative costs with reductions in contributions from individuals (Marudas, 2004; Okten & Weisbrod, 2000; Tinkelman & Mankaney, 2007). This relationship between administrative expenses and contributions can potentially have an indirect negative effect on levels of service delivery by reducing total revenue.
However, following the nonprofit financial vulnerability theory, I hypothesize that higher administrative costs are associated with more flexibility and less financial vulnerability.

*H4: Nonprofit organizations with higher administrative expense ratios make smaller cuts to programs/services after experiencing a financial shock*

3.3.4. Borrowing

Organizations facing financial shocks can experience short term liquidity problems that compromise their ability to maintain desired levels of operation. An organization may be willing to draw from its net assets but be constrained by the liquidity of its assets. For example, the net assets held by an organization may be comprised mostly by capital assets which are generally illiquid assets. In these cases, the organization may opt to borrow money short-term to avoid service cutbacks and repay once financial resources are made available. From this perspective, an organization’s short-term borrowing capacity can be related to financial vulnerability.

The debt ratio as a determinant of nonprofit financial vulnerability was first introduced by Trusell (2002) who stated that “organizations with relatively large amounts of debt may be less able to finance new and continuing programs and projects than those with relatively small amounts of debt” (Trussel, 2002, p. 20).

The connection between debt and nonprofit vulnerability can be attributed to the fact that organizations with higher debt have their funds committed to paying the debt. Principal and interest payments constitute firm claims on an organization’s resources and reduce the flexibility for the organization to use its resources. The cash flows of an organization may already be committed to future repayments of debt. Organizations with a lower debt burden are in a better position to
borrow money to meet their short term needs to maintain the desired level of program/service expenses.

Another strategy for organizations that find themselves with limited current resources to cover expenses is to delay the payments of the resources needed to maintain the desired level of services. This option is only viable for organizations with low debt ratios; organizations with high debt ratios are at high risk of compromising the financial stability of the organization if they opt to delay payments because they already have other claims on their cash flows. Note that while short term borrowing or delaying payments is not necessarily the best long term strategy for an organization, it is an option available to organizations with low debt ratios that are committed to maintaining the same level of expenses.

Delaying payments to providers is a tactic used for cash management purposes and can lead to problems if used in excess. Nonprofit organizations cannot get away with delaying payments to suppliers for very long periods of time before suffering negative consequences. For example, suppliers may become reluctant to continue providing supplies and/or services necessary for operations to nonprofit organizations that frequently delay payments for prolonged periods of time.

**H5: Nonprofit organizations with a lower debt ratio make smaller cuts to programs/services after experiencing a financial shock**

I have discussed the different options that managers have to replace lost revenue in the event of a financial shock. Although these options are available, that does not necessarily mean that they are carried out. Organizations may choose to reduce their level of services despite having the flexibility to maintain them. One of the purposes of this second essay is to explore the extent
to which these alternatives are helping managers replace lost revenues and maintain stable levels of program service delivery.

3.3.5. Other Organizational Characteristics

Following previous research on nonprofit financial vulnerability (Hager, 2001; Trussel, 2002; Tuckman & Chang, 1991; Twombly, 2003), I also included controls for size and subsector in the analysis of financial vulnerability.

These additional determinants are introduced as a recognition that the nonprofit sector is vastly heterogeneous, not only in terms of the variety of missions that organizations pursue, but also in terms of their size. Furthermore, nonprofit organizations go through different life-cycles that give shape to the types of challenges they face at the different stages of existence (Kearns, 2010). These inherent differences between organizations are likely to affect not only the magnitude of the revenue reduction, but also how the operations are impacted.

Although no theory has been developed to explain why differences in size might make an organization more or less financially vulnerable, it could be argued that larger organizations are less susceptible to financial shocks. For example, age has been associated with an organization’s reputation (Okten & Weisbrod, 2000) and involvement in formal collaboration networks (Guo & Acar, 2005) which, in the context of this study, would explain why larger organizations would affect more stakeholders by cutting back services and are therefore less likely to do so after a financial shock.

**H6: Larger nonprofit organizations make smaller cuts to programs/services after experiencing a financial shock**
Finally, several studies of nonprofit finances suggest that there are important differences in the finances of the nonprofit subsectors (see for example: Bowman, 2011; Wilsker & Young, 2010). For this reason, I included subsector analyses meant to highlight how the determinants of nonprofit financial vulnerability differ by subsector.

3.4. Data

The data used for the analysis came from the NCCS-GuideStar National Nonprofit Research Database (the "Digitized Data") which contains detailed information of 501(c) (3) public charities that filed their annual tax forms (Forms 990 or 990-EZ) with the IRS between 1998-2003 and from NCCS’s Core Files that contain basic financial information from the same forms for the period 1990-2003. Note that religious organizations regardless of size and charities with gross revenues below $25,000 are not required to file these forms.

I used the Core Files to estimate the dependent variable (Standardized Abnormal Expenses, SAE) and one of the independent variables of the regressions (Standardized Abnormal Revenues, SAR). The calculation of the two standardized abnormal variables (SAE and SAR) required a stable panel dataset of at least 13 years. Refer to section 2.5 from the second chapter (first essay) of this dissertation for an overview of the process of constructing a workable dataset.

In addition to the data cleaning steps conducted for the analyses in Chapter 2, I had to address other data issues related to the variables included in the analyses presented in this chapter. For example, organizations that reported negative expenses, assets, and liabilities were eliminated from the sample because they are likely to be reporting errors. Also, organizations with inconsistencies in reporting their net assets (e.g. total net assets were not equal to unrestricted, temporarily restricted and permanently restricted net assets) were also dropped. The period of
analysis was limited to two years after the attacks (2002 and 2003) to match the time when organizations in the nonprofit sector appeared to have experienced most of the revenue disruptions after the attacks (Guerrero & Purtell, 2011). Table 3.2 summarizes the number of organizations dropped to create a workable database of 20,734 organizations.

Table 3.2. Data Cleaning Steps and Sample

<table>
<thead>
<tr>
<th>Data Cleaning Step</th>
<th>Number of Organizations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Starting Number of Organizations in Sample (2003)</td>
<td>268,917</td>
</tr>
<tr>
<td>Organizations with incomplete 13 year time series or negative revenues</td>
<td>(229,674)</td>
</tr>
<tr>
<td>Organizations that filed EZ form</td>
<td>(2,151)</td>
</tr>
<tr>
<td>Organizations that did not use accrual method of accounting</td>
<td>(13,432)</td>
</tr>
<tr>
<td>Organizations with inconsistencies in revenue data</td>
<td>(839)</td>
</tr>
<tr>
<td>Organizations with inconsistencies in expenses, assets, liabilities, and net assets</td>
<td>(2,087)</td>
</tr>
<tr>
<td>Resulting Number of Organizations in Sample</td>
<td>20,734</td>
</tr>
</tbody>
</table>

As a result of these data handling decisions, the generalizability of the results may be compromised especially because the observations dropped are more likely to be of smaller nonprofit organizations. The table below displays the distribution by subsector and fiscal year of the 20,734 observations included in the resulting sample. Two observations (2002 and 2003) were included for each organization for a total of 41,468 observations.
Table 3.3. Sample by Subsector and Fiscal Year

<table>
<thead>
<tr>
<th>Subsector</th>
<th># Organizations</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Arts, Culture, and Humanities</td>
<td>1,855</td>
<td>8.9%</td>
</tr>
<tr>
<td>Education</td>
<td>2,092</td>
<td>10.1%</td>
</tr>
<tr>
<td>Environment and Animals</td>
<td>574</td>
<td>2.8%</td>
</tr>
<tr>
<td>Health</td>
<td>4,851</td>
<td>23.4%</td>
</tr>
<tr>
<td>Human Services</td>
<td>8,657</td>
<td>41.8%</td>
</tr>
<tr>
<td>International, Foreign Affairs</td>
<td>293</td>
<td>1.4%</td>
</tr>
<tr>
<td>Mutual/Membership Benefit</td>
<td>19</td>
<td>0.1%</td>
</tr>
<tr>
<td>Public, Societal Benefits</td>
<td>1,919</td>
<td>9.3%</td>
</tr>
<tr>
<td>Religion Related</td>
<td>444</td>
<td>2.1%</td>
</tr>
<tr>
<td>Other</td>
<td>30</td>
<td>0.1%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>20,734</strong></td>
<td><strong>100.0%</strong></td>
</tr>
</tbody>
</table>

Figure 3.2 displays the geographic distribution by State of the nonprofit organizations included in the sample. Organizations from all 50 U.S. States were included in the sample. New York and California were the States with the most organizations in the sample with 2,240 (10.8%) and 1,863 (8.99%) respectively.
3.5 Method

The model introduced in this paper differs from previous research of nonprofit financial vulnerability in the operationalization of nonprofit financial vulnerability. Following Tuckman and Chang’s (1991) definition of nonprofit financial vulnerability, the operationalization of nonprofit vulnerability that I use incorporates both the “financial shock” and the “program/service cutback” components of the original definition. This is achieved by using the Standardized Abnormal Revenue (estimated for Essay 1) as a measurement of financial shock and a corresponding Standardized Abnormal Expense as a measurement of program/service cutbacks.

Using Standardized Abnormal Expense as the dependent variable has two advantages over previous models used to study nonprofit financial vulnerability. First, it moves away from the thresholds used in previous research (see for example: Greenlee & Trussel, 2000; Keating et al.,
2005; Trussel, 2002) to identify financially vulnerable organizations and instead uses a continuous variable. Second, the Standardized Abnormal Expense (SAE) variable is a proxy for service cutbacks that captures the deviation of expenses from the expected expenses as determined by the ten previous years of expenses. The result of this analysis is a contribution to what we know about the relationship between revenue shocks and expense shocks that are likely to result in program service cutbacks.

The basic empirical analysis in this paper explores the effects of the different determinants of nonprofit vulnerability (independent variables) on the expenses of the organization. It is meant to capture if the nonprofit financial vulnerability variables can help explain management’s response to revenue disruptions. Due to the characteristics of the data, I ran a two-way fixed effects model.

The models for the two-way fixed effects regressions were:

\[ SAE_{it} = \beta_1 (SAR)_{it} + \beta_2 (Operating Margin \text{ (lagged)}) + \beta_3 (Years \text{ of Unrestricted Net Assets}) + \beta_4 (Administrative Expense Ratio \text{ (lagged)}) + \beta_5 (Debt Ratio) + \beta_6 (Log \text{ of Assets}) + \beta_7 (2003dummy) + \eta_i + \delta_t + \epsilon_{it} \]

Where \( \eta_i \) are organizational fixed effects, \( \delta_t \) are time fixed effects, and \( \epsilon_{it} \) is the error term. I first ran the regression using the full sample of nonprofit organizations and then using subsamples containing each of the nine broad nonprofit subsectors. I lagged operating margin and administrative expense ratio by one year both to avoid endogeneity problems and to capture these values before the attacks occurred. For the years of unrestricted net assets, debt ratio, and log of assets variables I also used the beginning of year values from the balance sheet because I am interested in capturing the financial condition of the nonprofit organization before the attacks.
I ran a total of 11 different regressions to assess the relationship between financial ratios and abnormal expense reductions. I first ran one regression with the full sample and subsector dummies to determine the explanatory power of the different determinants of nonprofit financial vulnerability on the sector as a whole. Then, I ran ten independent regressions to assess if the explanatory power of the determinants differs by subsector.

3.5.1. Dependent Variables

One of the major limitations of nonprofit research based on Form 990 information, and nonprofit research in general, is that there is no one best way to measure output. Ideally, any measurement of service delivery should include units of output delivered (Tinkelman & Donabedian, 2007). Nonprofit organizations pursue a myriad of missions and provide a very wide array of goods and services (Tinkelman & Donabedian, 2007) which makes it difficult to measure output. This study inevitably faces this data limitation when attempting to assess changes in operations of nonprofit organizations. A way to measure operations of nonprofit organizations and comparing them is by looking at financial information. This is the basis of the monetary denominator concept according to which organizations’ actions that have a financial element are expressed in monetary terms (Finkler, Purtell, Calabrese, & Smith, 2012). For this reason, I use a variable derived from total expenses as a proxy of nonprofit organizations’ change in the level of program/service delivery. Although imperfect, the use of expenses to measure levels of service is a viable option as it helps overcome the problem of the different output units by measuring them in monetary values which serve as a common denominator. Note that this measure is used as a dependent variable in the model and therefore any measurement error will result in estimates that are less precise but not biased (Nachtsheim, Neter, Kutner, & Wasserman, 2004).
Consequently, I used the historical expenses of each nonprofit organization to estimate the Standardized Abnormal Expense which is the dependent variable of the regressions. For doing so, I followed the same steps described in the previous essay (section 2.6) using total expenses instead of total revenues. These steps result in the estimation of the Standardized Abnormal Expense (SAE) variable that is used as a proxy of program service changes. In this respect, negative SAE values can be understood as reductions in program/services.

3.5.2. Independent Variables

Hypothesis number one states that nonprofit organizations that experienced greater revenue shocks after the event cut back more on programs/services. To test this hypothesis I used Standardized Abnormal Revenue (SAR) which was estimated following the same procedure as the Standardized Abnormal Expense (SAE) but using total revenues instead of total expenses. I used the SAR values that I had estimated for the first essay of this dissertation. The expectation is for a positive and significant coefficient because organizations with high/low SAR are expected to have high/low SAE.

Hypothesis number two states that organizations with larger operating margins cut back less on programs/services after experiencing a financial shock. I tested this hypothesis using a lagged operating margin measure ([unrestricted revenues - total expenses] / unrestricted revenue). The expectation is for a positive and significant coefficient because organizations with higher operating margins are expected to be in a better position to confront revenue reductions and will at least be able to maintain a stable level of program/services delivery. This variable is lagged because it is calculated using expenses which are also part of the calculation of the dependent variable.
Hypothesis number three states that nonprofit organizations with higher unrestricted net asset balances cut back less on programs/services after experiencing a financial shock. I tested this hypothesis using the variable years of unrestricted net assets. Following recent research on the accumulation of wealth by nonprofit organizations (Calabrese, 2011; Marudas, 2004), years of net assets is used as a standardized measure of the net asset balance. Years of net assets are defined as unrestricted net assets at the beginning of the year divided by the result of subtracting the fundraising expenses from the total expenses of the previous year (unrestricted net assets / [program expenses-fundraising expenses]). Although nonprofit vulnerability literature has used equity balance ([assets – liabilities] / revenues) to measure the ability of an organization to pull resources from previous years’ retained earnings at the event of a financial shock, one can argue that years of net assets is a preferable indicator because it not only adjusts for the unrestricted net assets, but also results in a number that can be interpreted more intuitively. Consequently, years of net assets can be interpreted as the time an organization can “continue to operate at current levels without any additional fundraising” (American Institute of Philanthropy, n.d.). The coefficient for this variable is expected to be significant and positive as organizations with higher net asset accumulations are hypothesized to be in a better position to confront revenue reductions and maintain a stable level of program/services delivery.

Hypothesis number four states that nonprofit organizations with higher administrative expense ratios cut back less on programs/services after experiencing a financial shock. I used the administrative expense ratio (administrative expenses/total expenses) to test hypothesis number four. The coefficient is hypothesized to be positive and significant which suggests that organizations with higher administrative expense ratios are in a better position to confront revenue reductions and maintain a stable level of program/service delivery.
Hypothesis number five states that organizations with a lower debt ratio cut back less on services/programs after experiencing a financial shock. I used the debt ratio to test hypothesis number five and calculated it by dividing total liabilities at the beginning of the year by the total assets at the beginning of the year (total assets/total liabilities). A negative and significant coefficient provides support to hypothesis number five as organizations that have higher levels of debt are expected to have higher expense reductions after experiencing a revenue disruption.

Hypothesis number six states that larger organizations cut back less on programs/services after experiencing a financial shock. Following Trussel (2002), I used the natural log of assets to control the size of the organization. A positive and significant coefficient provides support to the hypothesis that bigger organizations are in a better position to face a financial shock.

Finally, I winsorized years of net assets, operating margin and debt ratio at the 1st and 99th percentile to reduce the effect of observations with extreme values (Watson, 1990) following previous research on nonprofit organizations’ finances (Calabrese, 2011; Marudas, 2004).
3.5.3. Summary of Hypotheses, Operationalization, and Independent Variables

The table below summarizes the hypotheses of the study, the variables used to operationalize the different hypotheses, and the expected sign of the coefficients.

**Table 3.4. Operationalization of Determinants and Expected Results**

<table>
<thead>
<tr>
<th>Determinant</th>
<th>Variable</th>
<th>Hyp. #</th>
<th>Pred. sign</th>
</tr>
</thead>
<tbody>
<tr>
<td>Risk (Standardized Abnormal</td>
<td>(unrestricted revenue&lt;sub&gt;t&lt;/sub&gt; – unrestricted revenue&lt;sub&gt;t-1&lt;/sub&gt;) / unrestricted revenue&lt;sub&gt;t-1&lt;/sub&gt;</td>
<td>1</td>
<td>+</td>
</tr>
<tr>
<td>Revenue)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Operating Margin (lagged)</td>
<td>(unrestricted revenues&lt;sub&gt;t-1&lt;/sub&gt; – total expenses&lt;sub&gt;t-1&lt;/sub&gt;) / unrestricted revenue&lt;sub&gt;t-1&lt;/sub&gt;</td>
<td>2</td>
<td>+</td>
</tr>
<tr>
<td>Years of Unrestricted Net</td>
<td>unrestricted net assets / (program expenses – fundraising expenses)</td>
<td>3</td>
<td>+</td>
</tr>
<tr>
<td>Assets</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Administrative Expenses Ratio (lagged)</td>
<td>administrative expenses / total expenses</td>
<td>4</td>
<td>+</td>
</tr>
<tr>
<td>Debt Ratio (leverage ratio)</td>
<td>total assets / total liabilities</td>
<td>5</td>
<td>-</td>
</tr>
<tr>
<td>Size</td>
<td>natural Log of beginning assets</td>
<td>6</td>
<td>+</td>
</tr>
</tbody>
</table>

Table 3.5 displays a summary of the independent variables used in the regressions. Notice the wide range for all variables. For example, even after winsorizing, the average Standardized Abnormal Expense was 0.68, and the range was between -4.84 and 7.52. Additionally, other winsorized variables such as years of net assets also had a very wide range. The average years of net assets is 1.6, and the range goes from negative -1.4 years of net assets accumulated to 25 years of net assets. Note that negative years of net assets indicates that an organization has more liabilities than assets.
<table>
<thead>
<tr>
<th>Variable</th>
<th>Observations</th>
<th>Mean</th>
<th>Std. Dev.</th>
<th>Min</th>
<th>Max</th>
</tr>
</thead>
<tbody>
<tr>
<td>Standardized Abnormal Expense *</td>
<td>41,468</td>
<td>0.68</td>
<td>1.97</td>
<td>-4.84</td>
<td>7.52</td>
</tr>
<tr>
<td>Standardized Abnormal Revenue *</td>
<td>41,468</td>
<td>0.24</td>
<td>2.05</td>
<td>-4.91</td>
<td>8.24</td>
</tr>
<tr>
<td>Operating Margin **</td>
<td>41,467</td>
<td>0.00</td>
<td>0.28</td>
<td>-1.81</td>
<td>0.77</td>
</tr>
<tr>
<td>Years of Net Assets *</td>
<td>41,468</td>
<td>1.60</td>
<td>3.27</td>
<td>-1.40</td>
<td>25.17</td>
</tr>
<tr>
<td>Administrative Expense Ratio **</td>
<td>41,468</td>
<td>15.92</td>
<td>13.01</td>
<td>0.00</td>
<td>100.01</td>
</tr>
<tr>
<td>Leverage Ratio *</td>
<td>41,468</td>
<td>35.59</td>
<td>40.80</td>
<td>0.00</td>
<td>270.35</td>
</tr>
<tr>
<td>Natural Log of Assets</td>
<td>41,468</td>
<td>14.60</td>
<td>2.02</td>
<td>3.69</td>
<td>24.51</td>
</tr>
</tbody>
</table>

* Winsorized 1%
** Lagged 1 year

Table 3.6 displays the correlation matrix of all the independent variables included in the regressions. Notice that the intercorrelation between the different determinants of financial vulnerability is generally low. The overall low correlations are consistent with Hager’s (2001) finding that the Tuckman-Chang measures of financial vulnerability are empirically unrelated to each other. The low correlations between the determinants suggest that nonprofit organizations vary in the options that they have available to replace lost revenues. For example, an organization with higher years of net assets does not necessarily have higher operating margins (correlation=0.151) and, therefore, drawing from accumulated net assets might be the best option to replace lost revenues. The only two determinants that have relatively higher correlation are the years of net assets and leverage ratio (correlation=-0.325) which is not surprising due to the fundamental relationship between assets, liabilities and net assets. Finally, the highest correlation is between the dependent variable (Standardized Abnormal Expense) and the risk variable (Standardized Abnormal Revenue).
Table 3.6. Correlation matrix

<table>
<thead>
<tr>
<th>Variable</th>
<th>(1)</th>
<th>(2)</th>
<th>(3)</th>
<th>(4)</th>
<th>(5)</th>
<th>(6)</th>
<th>(7)</th>
<th>(8)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Standardized Abnormal Expense (1) *</td>
<td>1.0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Standardized Abnormal Revenue (2) *</td>
<td>.584</td>
<td>1.0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Operating Margin (3) **</td>
<td>.156</td>
<td>.001</td>
<td>1.0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Years of Net Assets (4) *</td>
<td>.028</td>
<td>-.117</td>
<td>.151</td>
<td>1.0</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Administrative Expense Ratio (5) **</td>
<td>-.020</td>
<td>-.018</td>
<td>.039</td>
<td>.198</td>
<td>1.0</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Leverage Ratio (6) *</td>
<td>-.035</td>
<td>.095</td>
<td>-.082</td>
<td>-.325</td>
<td>-.051</td>
<td>1.0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2003 Dummy (7)</td>
<td>-.068</td>
<td>-.013</td>
<td>-.068</td>
<td>-.011</td>
<td>-.002</td>
<td>.010</td>
<td>1.0</td>
<td></td>
</tr>
<tr>
<td>Natural Log of Assets (8)</td>
<td>.152</td>
<td>.003</td>
<td>.045</td>
<td>.200</td>
<td>-.039</td>
<td>-.013</td>
<td>.005</td>
<td>1.0</td>
</tr>
</tbody>
</table>

* Winsorized 1%  
** Lagged 1 year

3.6. Results and Discussion

The regression results generally support the hypotheses of the study since the coefficients of five of the six hypotheses were found statistically significant with the expected sign for the preferred fixed effects regression. These results are consistent with previous research on nonprofit financial vulnerability that, independently of the operational definition, has generally found the different predictors to have significant explanatory power for the nonprofit sector as a whole. The table below summarizes the results of a fixed effects model and a random effects model. The only notable difference between the fixed effects and random effects results is the lack of significance of the administrative expense ratio coefficient for the fixed effects model and a negative and significant coefficient for the random effects model.
Table 3.7. Determinants of Nonprofit Financial Vulnerability Fixed Effects and Random Effects

<table>
<thead>
<tr>
<th></th>
<th>Fixed Effects</th>
<th>Random Effects</th>
</tr>
</thead>
<tbody>
<tr>
<td>SAR (winsorized 1%)</td>
<td>0.444***</td>
<td>0.532***</td>
</tr>
<tr>
<td></td>
<td>(0.01)</td>
<td>(0.00)</td>
</tr>
<tr>
<td>Operating Margin (lagged)</td>
<td>1.033***</td>
<td>1.131***</td>
</tr>
<tr>
<td></td>
<td>(0.04)</td>
<td>(0.03)</td>
</tr>
<tr>
<td>Years of Net Assets (winsorized 1%)</td>
<td>0.176***</td>
<td>0.0210***</td>
</tr>
<tr>
<td></td>
<td>(0.01)</td>
<td>(0.00)</td>
</tr>
<tr>
<td>Admin. Expense Ratio (lagged)</td>
<td>0.000801</td>
<td>-0.00264***</td>
</tr>
<tr>
<td></td>
<td>(0.00)</td>
<td>(0.00)</td>
</tr>
<tr>
<td>Leverage Ratio (winsorized 1%)</td>
<td>-0.00965***</td>
<td>-0.00341***</td>
</tr>
<tr>
<td></td>
<td>(0.00)</td>
<td>(0.00)</td>
</tr>
<tr>
<td>2003 Dummy</td>
<td>-0.206***</td>
<td>-0.198***</td>
</tr>
<tr>
<td></td>
<td>(0.01)</td>
<td>(0.01)</td>
</tr>
<tr>
<td>Log of Assets</td>
<td>0.919***</td>
<td>0.138***</td>
</tr>
<tr>
<td></td>
<td>(0.04)</td>
<td>(0.00)</td>
</tr>
<tr>
<td>Constant</td>
<td>-12.70***</td>
<td>-1.240***</td>
</tr>
<tr>
<td></td>
<td>(0.61)</td>
<td>(0.07)</td>
</tr>
<tr>
<td>N</td>
<td>41467</td>
<td>41467</td>
</tr>
</tbody>
</table>

Standard errors in parentheses
* p < 0.05, ** p < 0.01, *** p < 0.001

The results strongly suggest that, in the event of a financial shock, nonprofit managers do choose to replace lost revenues by pulling from their retained earnings, decreasing operating margins, and/or incurring debt. The results provide support to the assumptions of the financial vulnerability theory. Evidence suggests that organizations that maintain levels of program operations in the event of a shock resort to the options outlined and replace lost resources. The only determinant of nonprofit vulnerability that was not statistically significant was the administrative expense ratio. However, these results should be taken with care due to the concerns that surround the administrative expense information reported in the 990 forms.

The magnitude of the coefficients suggest that the size of the organization has the greatest explanatory power. A one standard deviation (1.85) increase of the log of assets results in an
increase of the SAE of 1.85. The other independent variables that explain most of the variation of the SAE are SAR and Years of Net Assets. A one standard deviation increase in the SAR (2.05) increases the SAE by 0.91 while a one standard deviation increase of the years of net assets (3.27 years) increases the SAE by 0.58. One shortcoming of the model used is that the interpretation of the coefficients is not intuitive because the dependent variable (SAE) is not meaningful to managers.

To assess the subsector differences, I ran independent fixed effects regressions of the determinants of financial vulnerability for each of the ten subsectors included in the NCCS data. Table 3.8 displays the results of the regressions and suggests that there are important subsectorial differences. The results suggest that, depending on the subsector, some options for replacing lost revenues are more successful at reducing financial vulnerability than others. For instance, the determinants of financial vulnerability appear to higher explanatory power for some sectors such as education, arts, culture, and humanities, and human services while for other sectors such as mutual/membership benefit the explanatory power of the determinants is limited.
Table 3.8. Fixed Effects Regression Determinants of Financial Vulnerability by Subsector

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>SAR (w. 1%)</td>
<td>0.341***</td>
<td>0.356***</td>
<td>0.350***</td>
<td>0.520***</td>
<td>0.452***</td>
<td>0.414***</td>
<td>0.143</td>
<td>0.472***</td>
<td>0.451***</td>
<td>1.019***</td>
</tr>
<tr>
<td></td>
<td>(0.018)</td>
<td>(0.017)</td>
<td>(0.034)</td>
<td>(0.011)</td>
<td>(0.008)</td>
<td>(0.045)</td>
<td>(0.392)</td>
<td>(0.018)</td>
<td>(0.035)</td>
<td>(0.136)</td>
</tr>
<tr>
<td>Op. Marg (lag)</td>
<td>0.593***</td>
<td>0.917***</td>
<td>0.822***</td>
<td>1.244***</td>
<td>1.298***</td>
<td>1.537***</td>
<td>3.517</td>
<td>0.926***</td>
<td>0.819***</td>
<td>1.109</td>
</tr>
<tr>
<td></td>
<td>(0.108)</td>
<td>(0.115)</td>
<td>(0.197)</td>
<td>(0.078)</td>
<td>(0.083)</td>
<td>(0.267)</td>
<td>(2.619)</td>
<td>(0.112)</td>
<td>(0.279)</td>
<td>(1.277)</td>
</tr>
<tr>
<td>Yrs of NA (w.1%)</td>
<td>0.278***</td>
<td>0.204***</td>
<td>0.165***</td>
<td>0.129***</td>
<td>0.211***</td>
<td>0.154</td>
<td>-0.0268</td>
<td>0.158***</td>
<td>0.459***</td>
<td>0.00599</td>
</tr>
<tr>
<td></td>
<td>(0.022)</td>
<td>(0.032)</td>
<td>(0.056)</td>
<td>(0.015)</td>
<td>(0.020)</td>
<td>(0.090)</td>
<td>(0.186)</td>
<td>(0.023)</td>
<td>(0.084)</td>
<td>(0.132)</td>
</tr>
<tr>
<td>Adm Exp Rat(lag)</td>
<td>0.00139</td>
<td>0.0178**</td>
<td>0.0159</td>
<td>-0.00957*</td>
<td>0.0070*</td>
<td>-0.0129*</td>
<td>0.0494</td>
<td>-0.00195</td>
<td>-0.00255</td>
<td>0.0278</td>
</tr>
<tr>
<td></td>
<td>(0.008)</td>
<td>(0.011)</td>
<td>(0.011)</td>
<td>(0.008)</td>
<td>(0.003)</td>
<td>(0.011)</td>
<td>(0.031)</td>
<td>(0.006)</td>
<td>(0.013)</td>
<td>(0.013)</td>
</tr>
<tr>
<td>Lev.ratio(w.1%)</td>
<td>-0.00285**</td>
<td>-0.00945***</td>
<td>-0.00691</td>
<td>-0.0126***</td>
<td>-0.00836***</td>
<td>-0.00147*</td>
<td>-0.0481</td>
<td>-0.0117***</td>
<td>-0.0122</td>
<td>-0.139*</td>
</tr>
<tr>
<td></td>
<td>(0.002)</td>
<td>(0.003)</td>
<td>(0.007)</td>
<td>(0.001)</td>
<td>(0.001)</td>
<td>(0.004)</td>
<td>(0.066)</td>
<td>(0.003)</td>
<td>(0.007)</td>
<td>(0.063)</td>
</tr>
<tr>
<td>2003 Dummy</td>
<td>-0.266***</td>
<td>-0.261***</td>
<td>-0.325***</td>
<td>-0.115***</td>
<td>-0.201***</td>
<td>-0.0253*</td>
<td>0.483</td>
<td>-0.320***</td>
<td>-0.185*</td>
<td>0.127</td>
</tr>
<tr>
<td></td>
<td>(0.041)</td>
<td>(0.040)</td>
<td>(0.081)</td>
<td>(0.023)</td>
<td>(0.019)</td>
<td>(0.098)</td>
<td>(0.464)</td>
<td>(0.045)</td>
<td>(0.079)</td>
<td>(0.300)</td>
</tr>
<tr>
<td>Log of Assets</td>
<td>1.209***</td>
<td>0.828***</td>
<td>1.645***</td>
<td>0.723***</td>
<td>0.933***</td>
<td>0.691**</td>
<td>-0.888</td>
<td>0.784***</td>
<td>1.373***</td>
<td>1.621</td>
</tr>
<tr>
<td></td>
<td>(0.130)</td>
<td>(0.144)</td>
<td>(0.348)</td>
<td>(0.077)</td>
<td>(0.065)</td>
<td>(0.234)</td>
<td>(1.229)</td>
<td>(0.146)</td>
<td>(0.255)</td>
<td>(1.209)</td>
</tr>
<tr>
<td></td>
<td>(1.863)</td>
<td>(2.239)</td>
<td>(4.994)</td>
<td>(1.179)</td>
<td>(0.965)</td>
<td>(3.398)</td>
<td>(17.530)</td>
<td>(2.105)</td>
<td>(3.520)</td>
<td>(16.260)</td>
</tr>
</tbody>
</table>

N = 3710 4184 1148 9701 17314 586 38 3838 888 60

Standard errors in parentheses
* p < 0.05, ** p < 0.01, *** p < 0.001
As expected, Standardized Abnormal Revenue was significant and with the expected sign for all subsector regressions with the sole exception of the Mutual Membership Benefit subsector. Note that none of the determinants of nonprofit financial vulnerability were found to be significant for this subsector which can be attributed to the fact that the sample size for these organizations was only 19 (38 observations for the two years). The magnitude of the SAR coefficient was the highest for organizations in the health subsector which suggests a very close association between changes of revenues and expenses. This result is consistent with the fact that health organizations are mostly funded by patient revenue which is correlated with the expenses associated with the treatment of the patient.

Similarly, the operating margin coefficient was significant and with the expected sign for eight of the ten subsector regressions. The regression for other organizations did not have a positive and significant operating margin coefficient. The importance of operating margins as a determinant of financial vulnerability is not surprising. An implication of higher operating margins is that there is more space for reductions in revenue before an organization that maintains its expense level operates at a deficit. In addition, consecutive years of positive operating margins may be reflected in net asset accumulation and can serve as a rainy day fund.

The fact that both abnormal revenue and operating margin are very strong predictors of significant reductions in expenses suggests that nonprofits operate with a short-term time horizon. Reductions in yearly revenues appear to trigger short-term expense reductions and service cutbacks in many nonprofit organizations.

The years of net assets coefficient was significant and with the expected sign for seven out of the nine regressions. This suggests that nonprofit organizations do draw from their accumulated
net assets to avoid reducing services/program delivery when experiencing a revenue shock. Note that another use of nonprofit organizations’ net assets can be program expansion and/or capital investments (Chang & Tuckman, 1990). The results of the regressions also provide support to these alternative rationales for accumulating net assets because high years of net assets are also associated with significant increases in expenses which can be due to program expansion.

Administrative expense ratio was only found to be a marginally significant predictor of financial vulnerability for three of the ten subsectors: positive for education and human services and negative for the health subsector. The positive and significant results for these two subsectors challenge the common belief that lower administrative expenses are always better, which has traditionally condemned organizations with comparatively higher administrative costs. Research suggests that a higher administrative expense ratio (lower efficiency) is associated with lower contributions (Okten & Weisbrod, 2000; Tinkelman & Mankaney, 2007). Research also suggests that the relationship efficiency-contributions is not that strong and that strategic “positioning through the aggressive communication of mission is a more potent driver of contributions than maintaining efficient operations” (Frumkin & Kim, 2001, p. 273). However, as mentioned before, these results should be interpreted with special care due to concerns about the reliability of the administrative expense data.

Six out of the ten subsectors had negative and significant debt ratio coefficients. These results provide some support to the hypothesis that organizations with higher debt ratios will cut more program/service delivery when experiencing a revenue reduction. Environment and animals, international/foreign affairs, mutual/membership benefits, and religion related were the subsectors for which the debt ratio coefficient was not found to be a significant predictor of financial vulnerability.
A more detailed analysis of table 3.8 exposes important differences between the magnitudes of the coefficients, further supporting the postulation that nonprofit organizations differ in how they react to financial distress. For example, the significant coefficients for the years of net assets determinant vary between 0.129 for the health subsector and 0.459 for the religion related subsector. These variations may be explained by the liquidity of the net assets. It is plausible that an important part of health organizations net assets is held in illiquid net assets such as property, plant, and equipment which are assets not readily available as cash to replace lost revenues.

Finally, table 3.9 summarizes the results of the subsector regressions by displaying the number of determinants of financial vulnerability determinants that were found significant at the 5% level for each subsector. Again, this table highlights that there are important subsector differences that require further exploration. Only two of the financial vulnerability determinants were significantly associated with program/service cutbacks for the international, foreign affairs subsector while all five determinants were significantly associated with such cutbacks for the education, health, and human services subsectors.
Table 3.9. Summary of Regression Results

<table>
<thead>
<tr>
<th>Subsector</th>
<th>Risk (SAR)</th>
<th>Operating Margin</th>
<th>Years of Net Assets</th>
<th>Administrative Expense Ratio</th>
<th>Leverage Ratio</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Arts, Culture, and Humanities</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>4</td>
</tr>
<tr>
<td>Education</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>5</td>
</tr>
<tr>
<td>Environment and Animals</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>Health</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>5</td>
</tr>
<tr>
<td>Human Services</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>5</td>
</tr>
<tr>
<td>International, Foreign Affairs</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>Mutual/Membership Benefit</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Public, Societal Benefits</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>4</td>
</tr>
<tr>
<td>Religion Related</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>Other</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Total</td>
<td>9</td>
<td>8</td>
<td>7</td>
<td>3</td>
<td>6</td>
<td>33</td>
</tr>
</tbody>
</table>

3.7. Robustness Tests

The literature on nonprofit financially vulnerability has consistently used logistic regressions to test the different financial ratios that make a nonprofit organization financially vulnerable (see for example: Greenlee & Trussel, 2000; Hager, 2001; Keating, Fischer, Gordon, & Greenlee, 2005; Trussel, 2003). For the preferred regression of this essay I avoided using a logistic regression model in order to not arbitrarily set a threshold. A shortcoming of using logistic regressions is that, given that the dependent variable is binary, the researcher has to choose thresholds to distinguish between organizations that are financially vulnerable from those which are not financially vulnerable without an empirical justification of the value set as the threshold. The fixed effects models that I ran for this essay avoid setting a cutoff that is not empirically
supported by using a continuous variable (SAE) as the dependent variable. However, a dependent binary variable has the advantage that it can be constructed with only one year of data. As referenced before, the construction of the SAE variable required a time series of at least 13 years for each organization, resulting in the need to drop a significant amount of observations from the sample. In contrast, a binary dependent variable to proxy nonprofit financial vulnerability can be constructed with only one year. As a result, a logistic regression with a sample that includes many of the organizations dropped from the fixed effects can lead to increased external validity of the results. For this reason, I ran a logistic regression model to test the robustness of the results of the fixed effects model.

The basic logistic regression model differs from the fixed effects model in two ways. First, the dependent variable is constructed using different thresholds of expense reduction. To avoid arbitrarily choosing one threshold of nonprofit financial vulnerability, I created four thresholds with different levels of expense reductions: 5%, 10%, 25%, and 50%. That is, the dependent variable for the 5% regression takes a value of 1 when a nonprofit organization experienced a 5% or higher expense reduction from year to year. The same applies to the 10%, 25% and 50% expense reduction thresholds. Second, I limited the sample to organizations that experienced year-to-year revenue reductions and included a revenue change variable as an independent variable to capture the magnitude of the revenue change. This variable replaces the Standard Abnormal Revenue variable included in the fixed effects model that, just like the Standard Abnormal Expense variable, requires a time series of 13 consecutive years of financial data to construct.

Table 3.10 presents the number of observations in the sample that experienced expense reductions at the different levels (5%, 10%, 25% and 50%) as well as the total observations in the sample. While 40.7% of the observations in the sample experienced at least a 5% expense
reduction in the fiscal year revenues were reduced, only 5.2% of the organizations experienced an expense reduction of at least 50% in the fiscal year their revenues were reduced. A total 46,533 different organizations were included in the sample, out of which 22,002 experienced revenue reductions in both 2002 and 2003.

Table 3.10. Summary of Dependent Variables

<table>
<thead>
<tr>
<th>Expense reduction</th>
<th># observations</th>
<th>% of observations</th>
<th>Total observations</th>
</tr>
</thead>
<tbody>
<tr>
<td>5%</td>
<td>23,779</td>
<td>40.7%</td>
<td>58,389</td>
</tr>
<tr>
<td>10%</td>
<td>17,989</td>
<td>30.8%</td>
<td>58,389</td>
</tr>
<tr>
<td>25%</td>
<td>10,920</td>
<td>18.7%</td>
<td>58,389</td>
</tr>
<tr>
<td>50%</td>
<td>3,051</td>
<td>5.2%</td>
<td>58,389</td>
</tr>
</tbody>
</table>

The logistic regression explores the effects of the different determinants of nonprofit vulnerability (independent variables) on the odds of experiencing different levels of expense reductions (dependent variables).

The basic logit models I ran were:

\[ \ln\left(\frac{p}{1-p}\right) = X_0 + X_1 \beta + \epsilon, \text{ where} \]

\( p = \) the probability that there were reductions in total expenses (5%, 10%, 25%, and 50% for the 4 regressions)

\( X_0 = \)Constant

\( X_1 = \)Percentage change in unrestricted revenue

\( X_2 = \)Lagged operating margin

\( X_3 = \)Years of unrestricted net assets

\( X_4 = \)Lagged administrative expense ratio

\( X_5 = \)Debt ratio
\[ X_6 = \text{Log of assets} \]

\[ X_{7-15} = \text{Subsector dummies} \]

The overall results of the logistic regression (Table 3.11) are consistent with the results of the fixed effects model for all but one variable: the administrative expense ratio was consistently significant across the four regressions. Besides the overall significance of the determinants of nonprofit financial vulnerability variables, it is worth noting that an important number of the subsector dummies were significant, supporting the decision to run independent regressions for each subsector. Also note that the magnitude of the coefficients for each of the determinants increases for higher expense reductions. This result provides some additional support to the determinants of nonprofit financial vulnerability theory and suggests that nonprofit managers may have their own thresholds of how much they are willing to reduce expenses before drawing from alternative sources. Finally, note that the pseudo r-squared for the regressions range between 0.18 and 0.41. The explanatory power of the models appears to increase as the total expense reduction threshold increases. This outcome confirms that the regression results depend on the threshold chosen to operationalize financial vulnerability and suggests that the determinants of financial vulnerability increase their explanatory power as the threshold is set at higher levels.
Table 3.11. Logistic Regression of Determinants of Nonprofit Financial Vulnerability (odds ratios)

<table>
<thead>
<tr>
<th></th>
<th>(1)</th>
<th>(2)</th>
<th>(3)</th>
<th>(4)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>5% expense reduction</td>
<td>10% expense reduction</td>
<td>25% expense reduction</td>
<td>50% expense reduction</td>
</tr>
<tr>
<td>% Δ in unrestricted revenue</td>
<td>1.041***</td>
<td>1.049***</td>
<td>1.058***</td>
<td>1.068***</td>
</tr>
<tr>
<td></td>
<td>(0.001)</td>
<td>(0.001)</td>
<td>(0.001)</td>
<td>(0.001)</td>
</tr>
<tr>
<td>Operating margin (lag and wins.)</td>
<td>0.0672***</td>
<td>0.0739***</td>
<td>0.0934***</td>
<td>0.136***</td>
</tr>
<tr>
<td></td>
<td>(0.005)</td>
<td>(0.006)</td>
<td>(0.007)</td>
<td>(0.007)</td>
</tr>
<tr>
<td>Years of Net Assets (wins.)</td>
<td>0.948***</td>
<td>0.948***</td>
<td>0.949***</td>
<td>0.961***</td>
</tr>
<tr>
<td></td>
<td>(0.004)</td>
<td>(0.005)</td>
<td>(0.006)</td>
<td>(0.006)</td>
</tr>
<tr>
<td>Administrative expense ratio (lag)</td>
<td>0.984***</td>
<td>0.986***</td>
<td>0.988***</td>
<td>0.992***</td>
</tr>
<tr>
<td></td>
<td>(0.001)</td>
<td>(0.001)</td>
<td>(0.001)</td>
<td>(0.002)</td>
</tr>
<tr>
<td>Debt ratio (wins.)</td>
<td>1.003***</td>
<td>1.003***</td>
<td>1.003***</td>
<td>1.003***</td>
</tr>
<tr>
<td></td>
<td>(0.000)</td>
<td>(0.000)</td>
<td>(0.000)</td>
<td>(0.000)</td>
</tr>
<tr>
<td>Log of Assets (wins.)</td>
<td>0.828***</td>
<td>0.807***</td>
<td>0.788***</td>
<td>0.798***</td>
</tr>
<tr>
<td></td>
<td>(0.004)</td>
<td>(0.005)</td>
<td>(0.006)</td>
<td>(0.010)</td>
</tr>
<tr>
<td>Education</td>
<td>0.842***</td>
<td>0.906</td>
<td>1.017</td>
<td>1.188</td>
</tr>
<tr>
<td></td>
<td>(0.034)</td>
<td>(0.040)</td>
<td>(0.055)</td>
<td>(0.118)</td>
</tr>
<tr>
<td>Environment and Animals</td>
<td>0.843**</td>
<td>0.93</td>
<td>1.06</td>
<td>1.252</td>
</tr>
<tr>
<td></td>
<td>(0.050)</td>
<td>(0.058)</td>
<td>(0.080)</td>
<td>(0.165)</td>
</tr>
<tr>
<td>Health</td>
<td>0.987</td>
<td>0.99</td>
<td>1.081</td>
<td>1.514***</td>
</tr>
<tr>
<td></td>
<td>(0.037)</td>
<td>(0.039)</td>
<td>(0.053)</td>
<td>(0.135)</td>
</tr>
<tr>
<td>Human Services</td>
<td>0.811***</td>
<td>0.786***</td>
<td>0.876**</td>
<td>1.175*</td>
</tr>
<tr>
<td></td>
<td>(0.026)</td>
<td>(0.027)</td>
<td>(0.038)</td>
<td>(0.097)</td>
</tr>
<tr>
<td>International, Foreign Affairs</td>
<td>1.296***</td>
<td>1.434***</td>
<td>1.584***</td>
<td>1.740***</td>
</tr>
<tr>
<td></td>
<td>(0.098)</td>
<td>(0.111)</td>
<td>(0.138)</td>
<td>(0.240)</td>
</tr>
<tr>
<td>Mutual/Membership Benefit</td>
<td>1.154</td>
<td>1.011</td>
<td>1.011</td>
<td>1.06</td>
</tr>
<tr>
<td></td>
<td>(0.311)</td>
<td>(0.269)</td>
<td>(0.318)</td>
<td>(0.662)</td>
</tr>
<tr>
<td>Other</td>
<td>1.035</td>
<td>0.959</td>
<td>1.14</td>
<td>1.053</td>
</tr>
<tr>
<td></td>
<td>(0.199)</td>
<td>(0.184)</td>
<td>(0.248)</td>
<td>(0.390)</td>
</tr>
<tr>
<td>Public, societal Benefits</td>
<td>1.184***</td>
<td>1.251***</td>
<td>1.378***</td>
<td>1.624***</td>
</tr>
<tr>
<td></td>
<td>(0.047)</td>
<td>(0.052)</td>
<td>(0.069)</td>
<td>(0.147)</td>
</tr>
<tr>
<td>Religion related</td>
<td>0.961</td>
<td>1.014</td>
<td>1.086</td>
<td>0.998</td>
</tr>
<tr>
<td></td>
<td>(0.060)</td>
<td>(0.067)</td>
<td>(0.087)</td>
<td>(0.156)</td>
</tr>
<tr>
<td>N</td>
<td>58389</td>
<td>58389</td>
<td>58389</td>
<td>58389</td>
</tr>
</tbody>
</table>

Standard errors in parentheses * p < 0.05, ** p < 0.01, *** p < 0.001; winsorized= (wins.), Exponentiated coefficients
3.8. Limitations

The generalizability of the conclusions of the analyses presented is compromised by the sample because a significant amount of observations were dropped in order to construct a workable database. The observations dropped were generally from smaller organizations that are more likely to either report unreliable information or to fail to report in a given year. For this reason, the findings of this chapter may not be applicable to smaller and younger organizations and it is possible that some of the determinants identified in this paper do not apply to them. For instance, smaller and young organizations may not have had the opportunity to build their net asset balances and years of net assets might not be related to financial vulnerability for these organizations.

Another limitation of this study is that it relies on a financial proxy of cutback in program services. Although it is reasonable to use total expenses as a proxy of program output, this is necessarily an imperfect measure as expenses do not always correlate with program/service delivery. The relationship between expenses and output is affected by a true measure of efficiency; one that doesn’t only consider the input (e.g. expenses) but that takes into account the output that is obtained from that input. However, there is no one measure of output for all nonprofit organizations as the services and programs provided by them vary significantly. The only possible way to measure and compare program/service outputs of different nonprofit organizations is by using a monetary value that can reasonably be associated with output, such as total expenses.

3.9. Conclusions

Nowadays nonprofit organizations face struggles that are not completely new and unique. The analysis of nonprofit organizations’ expenses after the September 11 attacks — as a proxy of program and service delivery— can provide some understanding of the characteristics that make some nonprofit organizations more able to absorb revenue reductions than others. The study of
nonprofit financial vulnerability has real world consequences (Hager, 2001). A better understanding of the strategies adopted by nonprofit organizations that manage to prevail when facing difficult financial times is of interest to a variety of stakeholders. Managers can identify plausible short and long term strategies to reduce an organizations financial vulnerability, donors and grantors can make more informed decisions when allocating resources, and policy makers can design policies to help financially vulnerable organizations avoid service disruptions in times of financial crisis.

The results of all the analyses reveal a very strong relationship between current revenues and current expenses as organizations with higher revenue reductions were more likely to have higher expense reductions. While this result was expected, it is worth noting that the strength of the relationship suggests that nonprofit organizations generally operate with short-term horizons and fund current operations with current revenues. Nonprofit organizations might benefit from longer-term planning that targets levels of service that do not primarily depend on the revenues earned during the year but that take into account the revenues earned over the course of several years.

Also of interest are the results showing that organizations with comparatively higher administrative costs are in a better position to avoid service cutbacks in the event of a financial shock. Nonprofit financial vulnerability literature would argue that this is because there is slack and that administrative costs can be reduced without compromising programmatic expenses. While this is possible, here I take a different approach, one that recognizes that organizations that invest in organizational capabilities are better equipped to deal with revenue reductions. For instance, higher administrative expenses can be attributed to managers that earn more competitive salaries and possess the skills and knowledge needed to guide an organization through difficult times.
Independently of which explanation is true, perhaps a combination of both, what is clear is that the pressures toward lower administrative costs may be hurting rather than helping the sector. For example, some grantors may want to revise the overhead policies to allow for higher levels of administrative expenses. This does not mean that higher administrative expenses are necessarily better, but rather that nonprofit organizations need to make sure they invest enough in organizational capabilities and do not yield to the dangerous starvation cycle. However, these results should be taken with caution as there is skepticism among nonprofit scholars regarding the reliability of the functional expense numbers reported in Form 990 (Froelich et al., 2000; Trussel, 2003).

Finding the debt ratio significant for all the regressions is also noteworthy and needs to be explored. It is not clear if lower debt ratios are associated with lower likelihood of service cutbacks because of their association with short-term borrowing or due to changes in other liability accounts such as increase in the accounts payable and deferred revenue. It is possible that the decisions to temporarily finance operations through debt can only delay program disruptions instead of avoiding them because the debt has to be paid back eventually with the organization’s own resources. Thus, a more comprehensive understanding of debt as a response to financial shocks needs to consider a longer time horizon; one that also assesses if the decisions taken as a result of the financial shock compromise the future operations of the organization.

Regarding the sector differences, the results of this study give additional support to what nonprofit literature is acknowledging: the nonprofit sector cannot be treated as a whole because there are inherent differences between the different subsectors. In this study it was determined that the determinants of financial vulnerability to shocks vary within the ten major subsectors. Further research should focus on more specific classifications as additional breakdowns within subsectors...
reveal intra-sector differences. In Hager’s study of arts organizations, he concluded that there is a need for “deeper investigation of how the applicability of the Tuckman-Chang (or other) measures varies across organizational subgroups” (Hager, 2001, p. 390). Further research can inquire about the underlying reasons that explain why the different determinants of financial vulnerability have different explanatory power depending on the subsector. This line of research can explore the characteristics of particular subsectors that contribute to differences in the determinants of nonprofit financial vulnerability. For example, the benefits theory of nonprofit finance (Wilsker & Young, 2010) can potentially be useful to explain the variations because the differences might depend on the nature of the programs/services provided.

3.10. References


4.1. Introduction

Nonprofit organizations facing financial distress have a variety of options they can adopt to help them overcome their problems. I have discussed how having combinations of revenues that correspond to the nature of the service and goods provided by a nonprofit may reduce the risk of experiencing financial distress in the first place and how certain characteristics of its financial position may permit a nonprofit organization to maintain stable levels of operation despite financial struggles. Another important question is what if the financial distress the nonprofit organization faces is so serious that the survival of the organization is compromised? Organizations facing such financial struggles have to decide among different options of action to overcome such difficulties. Some of the options discussed in previous chapters—which include but are not limited to: drawing from net assets when available, looking for other sources of revenue, borrowing money short term, and cutting non-programmatic expenses—can potentially help organizations that are struggling financially. Another plausible option for these nonprofit organizations to improve their finances is merging with other organizations. This essay focuses on nonprofit mergers and explores the extent to which nonprofit organizations opted to merge during the three years following the 9/11 attacks as a response to financial distress and whether the merger led to improvements in the financial condition of the merged organization. Unexpected events can increase the probability that a nonprofit organization faces financial distress as well as increase the prospect of undergoing a merger. In this essay, I treat 9/11 as an exogenous potential cause of distress to analyze mergers and contribute to our understanding of the financial outcomes of nonprofit mergers.
A different option that organizations have when facing financial distress is simply to disappear. Anecdotal evidence suggests that a common option chosen by nonprofit organizations in financial distress is to simply cease operating, often without formally dissolving. A significant number of nonprofit organizations every year lose their tax exempt status for failing to file Form 990 for three years in a row. For instance, more than 275,000 nonprofit organizations lost their tax exempt status in 2011 after the enactment of the Pension Protection Act of 2006 (which required organizations with revenues less than $25,000 to file Form 990-N known as the e-postcard). Many of the organizations that lost their tax exempt status were likely out of operation but not officially dissolved (Blackwood, 2011). Many nonprofit organizations exist and linger as “financial zombies” (Bowman, 2002) long after they have become insolvent and have ceased to operate.

Nonprofit organizations facing financial distress are presented with the option of merging because mergers are presumed to improve the finances of the merging organizations. The literature on nonprofit mergers stresses different potential financial benefits that nonprofit organizations can realize by merging. These benefits include efficiency improvements through economies of scale, increased funding base, and less competition for resources (Jenkins, 2000; McCormick, 2001; Pietroburgo & Wernet, 2010). Besides these financial benefits, other benefits of merging commonly referred to in the literature include: access to a wider range of partners and clients, potential to increase the quality of the services, and access to technology from the merged organizations (Jenkins, 2000).

Despite all the potential benefits of mergers, the reality of the nonprofit sector is that—with the exception of nonprofit hospitals—mergers are uncommon for most types of nonprofit organizations (Jenkins, 2000). Merging is not among the first options that nonprofits tend to consider when facing difficult financial times (Singer & Yankey, 1991) and nonprofit managers
often associate merging with failure, only consider merging when their organization’s survival is at risk (Golensky & DeRuiter, 1999; Jenkins, 2000).

As an example, anecdotal reports suggest that merging was a good decision for some nonprofit organizations that were struggling after the great recession of 2007. A case study (Gassman et al., 2012) reports on a nonprofit organization in Florida that provides housing and support to the homeless. The organization was struggling to survive in 2009 but was able to continue in operation without a disruption of services after it successfully merged with another nonprofit organization. Similarly, a report in the press (Banjo & Kalita, 2010) tells the story of Big Brothers Big Sisters of Chicago, an organization that was reported as constantly facing a financial crisis because it was dependent on government and United Way support. This problem was reportedly solved after merging four affiliates in 2009. After the merger, the organization was able to secure private funding to complement their other funding sources. While anecdotal evidence may suggest that merging can potentially be a good option for struggling nonprofit organizations, it is only anecdotal evidence. Generalizations about the financial benefits of mergers cannot be made based on a few cases.

Statistical analyses of nonprofit mergers are glaringly absent from the academic nonprofit literature. The scarce research available on the topic has consisted mainly of case studies of organizations that have merged (see for example: Golensky & DeRuiter, 1999; Schmid, 1995; Toepler, Seitchek, & Cameron, 2004). While case studies provide a valuable insight to the merger process and the different challenges and opportunities presented to organizations that decide to merge, the findings of these studies cannot be generalized beyond the few organizations studied. This essay partially overcomes this problem by examining the finances of organizations that merged in New York State between 2002 and 2004.
The empirical analyses presented in this essay explore two interrelated questions. First, it looks at the historical trend of nonprofit mergers in New York State to determine whether the frequency of nonprofit mergers increased after the September 11 attacks. Then it explores whether the mergers that happened during the three years following the attacks were successful in terms of realizing the financial benefits that are expected from mergers.

This essay is the first cross-sectional time series study of nonprofit mergers. While previous case studies of nonprofit mergers have provided insights about the merger process, they have failed to address a fundamental question: Are the potential financial benefits of nonprofit mergers realized? Academic literature emphasizes the benefits that merging can bring to a nonprofit organization, but no studies have tested if these benefits are actually accomplished. This essay explores the financial outcomes of nonprofit mergers in New York State after 9/11 and finds (1) that nonprofit merger activity did not increase after the September 11 attacks and (2) mergers seldom result in the positive financial outcomes that are often expected from nonprofit mergers.

The remainder of this essay is organized as follows: In the next section, I set the framework of the essay by reviewing the literature that has addressed broad questions about nonprofit mergers and then focusing on the financial benefits that are expected from merging. First, reference the literature that defines nonprofit mergers, discuss some theoretical explanations of why mergers happen in the nonprofit and for-profit sectors, and discuss the benefits that nonprofit organizations expect from mergers. This discussion leads to the potential financial benefits of mergers in the nonprofit sector which constitute the main hypotheses of this empirical study. I then present the data, methodology, and results of the analyses. I conclude the essay by discussing some of the implications of the findings and limitations of the study.
4.2. What is a Merger?

In the *Guide to Mergers and Consolidations of Nonprofit Corporations*, New York State’s Attorney General defines mergers and consolidations as: “statutory procedures by which two or more constituent corporations becomes a single corporation. In a merger, the resulting entity, called the surviving corporation, is one of the constituent corporations. In a consolidation, the resulting entity is a new corporation, called the consolidated corporation” (New York State Charities Bureau, n.d.).

Similarly, a merger has been defined in the nonprofit literature as the legal act of the coming together of two or more organizations into one organization with a single governing body (Dewey & Kaye, 2007; McCormick, 2001). This single governing body is the combination of boards, staff, and physical facilities of the merging organizations (Singer & Yankey, 1991, p. 358). Mergers come in different forms (Pietroburgo & Wernet, 2010). The most common type of merger is when one or more of the organizations merging, usually the weaker one, is dissolved, loses its corporate existence, and becomes part of the surviving organization that preserves its corporate existence (Campbell, 2008; Singer & Yankey, 1991). The assets and liabilities of the merging nonprofit organizations are combined as a result of the mergers. While merging organizations often combine staff, boards, and programs when merging, mergers can also be an opportunity to reduce staff, consolidate boards, and eliminate programs. The other type of merger, also referred to as consolidation, occurs when two or more organizations dissolve and establish a new organization that integrates the structure and operations of the dissolved organizations (Pietroburgo & Wernet, 2010; Singer & Yankey, 1991). In this essay, I focus on mergers in which one organization preserves its corporate existence.
4.3. Mergers in the For-Profit Sector

While mergers are common in the corporate arena, they are not nearly as common in the nonprofit world. In the for-profit sector, mergers are seen by firms as “a strategic management option to enhance their companies’ long term position, maximize the effective use of resources, and benefit shareholders” (Jenkins, 2000, p. 1). This incentive goes hand in hand with for-profit organizations’ ultimate goal of profit maximization.

An analysis of the total number of mergers in New York State corroborates that mergers occur more frequently in the for-profit sector. While the total number of mergers in domestic nonprofit organizations in New York State between 2002 and 2004 was 90, the total mergers and consolidations of New York domestic businesses and domestic limited liability companies during the same period was around 17 times this number, for a total of close to 1,800 mergers.

Studies of mergers in the for-profit sector often explore “potential opportunities for profitable corporate growth through mergers” (Lewellen, 1971, p. 521). Specifically, the academic literature has examined the “circumstances under which it is reasonable to expect that the result of a merger would be a security market valuation of the combined enterprise which exceeds the sum of the original valuations of its component parts” (Lewellen, 1971, p. 521). The main interest of these studies is the effect of the merger on the valuation of the firm (see for example Burkart, Gromb, & Panunzi, 1997; Pindyck, 1986). Studies have found that most of the for-profit mergers are not successful as the percentage of mergers that fail is believed to be somewhere between 70% and 90% (Christensen, Alton, Rising, & Waldeck, 2011). If the nonprofit sector were to learn from the corporate sector’s experience with mergers, the expectations of the outcome of mergers would be that “strategic objectives are rarely achieved, financial savings are rarely attained,
productivity initially falls off, staff morale deteriorates and there is considerable stress and anxiety among the workforce” (Field & Peck, 2003, p. 752).

Corporate finance literature often distinguishes between at least two different types of mergers: vertical mergers and horizontal mergers (see for example: Mueller, 1969). Vertical mergers occur when organizations in different steps of the supply chain merge. For example, a company that produces a drink merges with a company that produces glass bottles for the drink. These types of mergers are not common in the nonprofit sector. Horizontal mergers occur when organizations that offer similar products in the same market merge. This type of merger is common both within the nonprofit and for-profit sectors. However, while for-profit mergers are generally meant to increase the wealth of the organizations that merge, non-profit mergers are often attempts to save organizations that are going out of business (Golensky & DeRuiter, 1999; Jenkins, 2000).

Transaction costs economics theory (Williamson, 1981) offers an alternative rationalization of why vertical mergers occur. In general, transaction cost theory explores how the costs that an organization incurs when participating in the market affect organizational behavior. Transaction cost theory theorizes that mergers occur when it is cheaper for an organization to perform an activity within the organization rather than outsourcing the activity to providers in the market. That is the main reason why organizations merge: to perform activities within the organization rather than incurring the transaction costs associated with searching and contracting providers on the market. This explanation is derived from Coase’s seminal paper The Nature of the Firm which states that individuals organize within firms to achieve ends that could conceivably be achieved through the pricing process because they want to avoid the transaction costs of looking for providers on the market. From this standpoint, a merger is a way for an organization to expand and “a firm will tend to expand until the costs of organizing an extra transaction within the firm
become equal to the costs of carrying out the same transaction by means of an exchange on the open market or the costs of organizing in another firm” (Coase, 1937, p. 96).

From a principal agency perspective, there can be agency problems associated with mergers. In some cases, a merger may not be in the best interest of the organization’s owners, but managers in control of the organization may have personal motives for pursuing a merger that are not necessarily the same as the owners’ interest (Jensen, 1986). For example, mergers often result in an increase in total sales and assets but not necessarily in higher profits. Because a manager’s compensation is generally associated with the size of the organization managed, a manager has the incentive to pursue a merger even if it doesn’t increase the wealth of the organization (Mueller, 1969). In addition, managers often have unrealistic confidence regarding what they can do and believe they can manage the assets of the merger target firm better than current management. This unrealistic confidence, known as managerial hubris, can lead to mergers that don’t result in maximization of the organization’s mission (Roll, 1986). As I discuss later in this chapter, incongruence between the management’s interest and the best interest of a nonprofit organization can be a reason why mergers are uncommon in the nonprofit sector. Managers in the nonprofit sector often associate a merger with the failure of the organization under their management and resist mergers in situations where merging can be a viable option (Golensky & DeRuiter, 1999; Jenkins, 2000).

Although merger theories from the for-profit sector can potentially contribute to our understanding of non-profit mergers, I focus on alternative theories that appear to be a better fit for the study of organizations in the nonprofit sector. For example, resource dependence theory was originally developed to provide a different perspective to economic theories of mergers (Davis & Cobb, 2010) and recognizes that the motivations of those running an organization are not
necessarily profit maximization but rather ensuring the organization’s survival. The following section discusses some of the propositions of resource dependence theory and its contribution to the understanding of mergers.

4.4. Resource Dependence Theory and Mergers

Organizational change theories provide valuable insight for understanding why mergers occur, how they occur, and what are the outcomes (Kezar, 2001). Adaptation theories of organizational change, sometimes referred to also as evolutionary theories, are particularly useful for understanding mergers. The major assumption of these theories is that organizations are open systems and organizational change occurs as organizations adapt to their environments (Kezar, 2001).

Resource dependence theory, one of the various adaptation theories, is particularly useful for understanding the dynamics behind mergers. Resource dependence is a theory of interdependence and power relationships between organizations that was introduced in The External Control of Organizations: A Resource Dependence Perspective (Pfeffer & Salancik, 2003). The central proposition of this theory is that organizations depend on their environments for the resources they need to survive.

The theory proposes that interdependence relationships occur when organizations don’t have complete control over the conditions necessary for effectively pursing their mission. Organizations depend on other organizations—and on the environment in general—to obtain the resources needed to operate and pursue their mission. Organizations require different kinds of resources, such as capital, labor, materials, and information that are distributed unevenly in the environment. Interdependence is an integral part of inter-organizational relationships and “is a
consequence of the open-systems nature of organizations—the fact that organizations must transact with elements of the environment in order to obtain the resources necessary for survival” (Pfeffer & Salancik, 2003, p. 43).

Resource dependence is also a theory about power and examines how an organization’s actions are influenced by power relationships present in the environment. As Pfeffer and Salancik point out, “it is the fact of the organization’s dependence on the environment that makes the external constraint and control of organizational behavior both possible and almost inevitable” (Pfeffer & Salancik, 2003, p. 43). Organizations that possess resources needed by other organizations can influence the behavior of the organizations that need the resources. To the extent that an organization in need of the resources cannot obtain them from different sources, the organization that possesses the resources has power over the organization that needs them.

The fundamental propositions about interdependence and power from resource dependence theory contribute to the understanding of nonprofit mergers in at least three different ways: (1) mergers as an attempt for survival; (2) mergers as a result of environment pressure; and (3) mergers as a way of managing the dependence on the environment.

First, mergers in the nonprofit sector are common among organizations whose survival is at risk (Golensky & DeRuiter, 1999; Jenkins, 2000). The survival of organizations can be at risk when they are not obtaining from the environment the resources needed to operate. In this setting, a merger is an option for the struggling organization as it can potentially obtain the resources it needs from the other organization(s) involved in the merger.

Second, nonprofit organizations’ behavior is influenced by private and public funders. Nonprofit organizations depend on financial resources to operate and funders are in a position to
influence nonprofit organizations’ behavior as the source of necessary resources. In this environment, funders are pressing nonprofits to merge because they believe “the nonprofit sector has too many organizations, and most nonprofits are too small and are therefore inefficient” (La Piana, 2010, p. 1). This is particularly true in the social service subsector where mergers are more frequent and are often the response to government contracting pressures (Golensky & DeRuiter, 2002). From this perspective, mergers of nonprofit organizations would reduce the competition for scarce funding and increase the efficiency and effectiveness of organizations (La Piana, 2010).

To the extent that mergers result in economies of scale and increased efficiency, another potential outcome of a merger is an increase in private contributions. Research on nonprofit contributions has shown that efficiency measures influence donors’ decisions to give and that efficiency is positively related with private contributions (Marudas, 2004; Tinkelman & Donabedian, 2007; Weisbrod & Dominguez, 1986). In this scenario, nonprofit organizations face external pressures from funders to increase efficiency and merging can potentially result in the desired efficiency increase by reducing the transaction costs.

Third, mergers can be understood as a strategy by an organization to manage environment interdependencies (Pfeffer, 1972). I have discussed previously how one of the potential benefits of a merger is revenue diversification. If organizations are able to diversify their revenues by merging, this can result in a reduction of their dependence on particular sources of revenue. From a resource dependence perspective, nonprofit organizations can manage their dependence, and increase their autonomy, by diversifying their revenues (Froelich, 1999). In addition, mergers can effectively reduce the number of suppliers of goods/services on the market and increase the power that individual nonprofits have to influence pricing and obtain contracts with more favorable conditions.
4.5. Mergers in the Nonprofit Sector

The academic literature on mergers in the nonprofit sector is very limited and has been dominated by case studies of merging organizations (Dewey & Kaye, 2007). If one were to evaluate the success of nonprofit mergers based just on case studies, the conclusion would inevitably be that mergers are generally successful. However, it is likely that this is not the case as case studies may only focus on cases where the expectations were met and pay little attention to cases where the outcome of the merger was below expectations.

While the empirical research on nonprofit mergers is limited, the few papers available provide valuable insights into some matters related to mergers such as the merger process, the risks of nonprofit mergers, and the potential benefits of mergers. The following sections discuss the literature that explores these topics and introduces the hypotheses of the essay.

4.5.1. Merger Process

Research on nonprofit mergers has placed special attention on the different phases of the merger process and the challenges and opportunities of each phase. A guide to mergers developed by the Greater New York Fund (1981) distinguishes between four different phases in the merger process: decision-making, planning, implementation, and evaluation. Similarly, Benton and Austin (2010) also place emphasis on the merging process and distinguish between three different stages of a merger: pre-merger, implementation, and post-merger. Case studies of organizations that merged have helped identify challenges encountered in the different stages of the merging process (Schmid, 1995) and the factors that can lead to a successful merger (Benton & Austin, 2010; La Piana, 2010; La Piana & Hayes, 2005). For the purpose of simplification, I differentiate between three stages: Decision making, planning and implementation, and evaluation.
Decision-Making Stage: Analyses of the decision-making stage of the merger process explore the motivations that lead nonprofit organizations to merge. A number of studies state that the most common catalyst for mergers for nonprofit organizations is adversity (Benton & Austin, 2010; Goldkind, Pardasani, & Marmo, 2013; McCormick, 2001; Singer & Yankey, 1991). When mergers occur in the nonprofit sector they are a desperate attempt for survival rather than a strategic choice. In this regard, McCormick (2001) considers that mergers are often considered in the nonprofit sector only when it is a choice between merging or going out of business.

Management literature on nonprofit mergers suggests that considering mergers only as a desperate attempt for survival instead of merging as a strategic decision to increase organizational effectiveness can be an explanation of why mergers fail (La Piana, 2010; McCormick, 2001). From this perspective, mergers of nonprofit organizations that are struggling financially are less likely to realize the potential benefits of the merger.

The financial benefits of merging are often cited as the main reason that organizations in the nonprofit sector decide to undergo a merger. For example, 17 out of the 18 nonprofit organizations included in a study of nonprofit mergers in Cleveland indicated financial reasons as a major force that led them to explore a merger (Singer & Yankey, 1991). Similarly, a study of 22 organizations in Pittsburg that explored, attempted, or completed a merger shows that cost savings was one of the major motivations for considering a merger (Dewey & Kaye, 2007).

Nonprofit organizations in different subsectors have particular reasons for pursuing mergers. For example, an important portion of the research on nonprofit mergers has been conducted in the health and social services subsector because mergers are more common in these sectors (Toepler et al., 2004). A study of approximately 3,300 nonprofit organizations that merged
in Massachusetts, Florida, Arizona, and North Carolina between 1996 and 2006 found that organizations in those subsectors are more likely to merge. Cortez, Foster & Milway (2009) found that the merging rate for organizations in the child and family services subsector was 7.1% while the rate of mergers for all nonprofit organizations was 1.5%. Organizations in the health and social services sectors merge more frequently because they face government contracting pressures that often lead them to pursue mergers (Golensky & DeRuiter, 1999, 2002). The competition for government resources is intense as many nonprofit organizations offering similar services pursue the same government funding (Benton & Austin, 2010; Golensky & DeRuiter, 1999; Jenkins, 2000). In addition, government funding for these services has decreased in recent years (Benton & Austin, 2010) and governments are increasingly looking for one-stop contracting as a way to reduce contracting costs (Cortez, Foster, & Milway, 2009). Funders are known to encourage mergers because the increased efficiencies may allow them to obtain the same results with reduced funding levels. In some cases, funders have even underwritten some of the expenses associated with the process of a merger (Greenlights for Nonprofit Success, 2013).

The child and human services field is considered a “fertile ground” for merger activity (Cortez et al., 2009). The higher merger activity in this subsector can be explained by three main factors. First, the child and human services sector is a particularly fragmented field comprised by a large number of nonprofit organizations with small operating budgets. Second, there are strong competitive pressures on the child and human services organizations. Most of the funding for the services offered by the organizations in these sectors comes from public funds. Meanwhile, governments are increasingly looking for “one stop contracting, which increases pressures on organizations to grow and makes smaller organizations less viable” (Cortez et al., 2009, p. 3). Finally, there are some barriers to the growth of the child and human services market (e.g.
government regulation) that make it more viable to strengthen existing organizations rather than start new ones (Cortez et al., 2009, p. 3).

In this funding context, mergers can be beneficial to both nonprofit organizations and governments. Nonprofit organizations benefit because mergers between organizations that compete for the same funding opportunities reduce competition and at the same time organizations relying on government funds can anticipate access to these funds with more certainty. This can result in an increase in the market power of the remaining nonprofit organizations as fewer organizations have more negotiating power. Governments potentially benefited as well, as they have fewer—and arguably more efficient—options of nonprofits to contract for the delivery of programs and services.

**Planning and Implementation:** Studies that explore the planning and implementation stages of the nonprofit mergers generally focus on the enablers/impediments of successful mergers. Case studies and interviews of organizations involved in the merger process have been used to identify factors that need to be considered in the merger process and to make recommendations for successful mergers. Some of the key factors are: compatibility of cultures, communication, leadership, and staff involvement (Benton & Austin, 2010; Schmid, 1995; Singer & Yankey, 1991).

Cultural factors can also play an important role in the implementation of mergers because conflicting cultures of the merging organizations make mergers more likely to fail. For this reason, a strong mission fit between the merging organizations is considered a key factor that contributes to successful partnerships (Greenlights for Nonprofit Success, 2013). Enhanced communication between board members, management, staff, and clients of the organizations can lead to a
successful merger. Constant communication of the advances of the merger is needed not only between all the parties directly involved in the merger, but also with funders, clients, and other stakeholders. The involvement of staff in the planning and implementation is also considered one of the most important factors (Pietroburgo & Wernet, 2010). Mergers result in personnel changes that can lead to anxieties and poor staff morale which often result in low productivity (Benton & Austin, 2010; Singer & Yankey, 1991). Involving staff in the process can alleviate some of these problems as employees have less uncertainty of how they will be affected and their concerns are heard (Schmid, 1995; Singer & Yankey, 1991). For this reason, strong leadership is considered a key factor for merger success (Benton & Austin, 2010; Pietroburgo & Wernet, 2010). Leadership from management and the board of directors is reflected in strategic plans that establish clear goals for the new organization (Golensky & DeRuiter, 1999, 2002b).

**Evaluation:** Singer and Yankey (1991) reviewed the research on the different stages of the merger process in the nonprofit sector and concluded that the evaluation stage has rarely been studied. Little attention has been given to the evaluation nonprofit mergers’ success. The few researchers who have paid attention to the evaluation of the mergers have found that mergers are generally successful. For example, Singer and Yankey’s (1991) study of 18 Cleveland nonprofits of different subsectors found that most managers reported having achieved the objectives of the mergers. Similarly, Dewey and Kaye (2007) found that most of the 22 organizations included in their sample of mergers in southwestern Pennsylvania reported that the mergers achieved the original objectives. However, the results of these studies are far from conclusive for two important reasons. First, the results of both studies are based on small and unrepresentative samples. Second, and perhaps more important, the success is subjectively determined by the manager of the organizations that merged. In this respect, there is no supporting data to corroborate that the
mergers were actually successful other than the opinions of the individuals that were involved in the merger. The results of these studies are inconclusive and there are no studies supported by financial data that evaluate the success of nonprofit mergers.

This essay starts to fill the gap by examining how the financial bottom line of nonprofit organizations is affected after a merger. Literature on nonprofit mergers has emphasized the financial benefits that can result from a merger without testing whether nonprofit organizations that have merged actually benefitted financially from the merger. The analyses presented in this essay are limited to determining whether nonprofit mergers in New York State that took place in the two years following the September 11 attacks resulted in the expected financial improvements. An evaluation of the underlying causes for success or failure of mergers is beyond the scope of this study.

4.5.2. Risks of Nonprofit Mergers

One reason why nonprofit sector mergers are not very common is that there are “valid concerns about the risks posed by a merger” (Golensky & DeRuiter, 1999, p. 140). One of the risks more commonly referenced is the loss of identity and autonomy (La Piana & Hayes, 2005). Those who control nonprofit organizations are frequently resistant to mergers because they perceive that merging can result in the loss of the identity of the organization that they are part of and have helped build.

Another related reason why nonprofit organizations do not frequently merge is due to the common association of mergers with financial difficulties. As mentioned before, mergers in the nonprofit sector are often considered only as a last resort. For this reason, there is an association of mergers with failure (McCormick, 2001) and those who control a nonprofit organization avoid
mergers because they do not want to be associated with failure. In addition, a merger might not be in the best interest of the managers because they could lose their positions as a result of the merger.

Besides the fact that mergers are less common in the nonprofit sector, the limited attention that nonprofit mergers have been given can also be explained by the absence of an unambiguous measure of nonprofit effectiveness (Herman & Renz, 1999). While a for-profit merger can be considered successful when the market valuation of the combined enterprises exceed the sum of the original valuations, the success of a nonprofit merger cannot be easily determined without evaluating the effectiveness of the resulting organization. This study will begin to address this issue by evaluating the financial results of nonprofit mergers. It only partially addresses the issue because it evaluates only the financial benefits of merging but does not directly evaluate the merger’s effect on organizational effectiveness.

Mergers are also uncommon in the nonprofit sector because the legal process of merging is often cumbersome, involves high costs, and “can sometimes hinder or disrupt the efforts to implement well-conceived mergers” (Jenkins, 2000, p. 13). The merging process in New York State, for example, is extremely cumbersome and involves several steps. Organizations that have decided to merge need to submit a series of documents to the NYS Attorney General for review. The list of these documents includes: a proposed plan of merger, proposed certificate of merger, all the governing instruments of the merging corporations, the 990 forms and audited financial statements for the past three years for all the merging corporations, and board minutes and resolutions that indicate that the merger has been approved by the boards of the merging corporations, among other documents. After the Attorney General’s approval of the documents, two thirds of the boards of the nonprofit organizations merging need to approve the merger (certain nonprofit organizations require special approval from other government agencies). The approved
documents are then signed by the Attorney General and submitted to the Court for approval. When the approval from the court is granted, the surviving nonprofit organization needs to submit a certified copy of the court order and a certificate of merger to the NYS Department of State and file a copy of this certificate in each county where it operates. Note that this process was recently simplified by the Nonprofit Revitalization Act of 2013 which eliminates the court approval requirement for most nonprofit mergers.

The merging process is not only cumbersome in New York State. A study of nonprofit mergers in Texas that interviewed 22 leaders whose organizations recently merged, reveals that the majority of the leaders found that the merger costs were higher than expected (Greenlights for Nonprofit Success, 2013). In addition to the costs of the merger itself, the study identified some additional expenses associated with leveling the salaries and benefits of the merging organizations (Greenlights for Nonprofit Success, 2013). Therefore, merging may not be an option many nonprofits consider due to the high transaction costs associated with the merging process. Many nonprofit organizations may not have the resources necessary to merge with another organization or, even if they are available, might opt to use them for other programmatic purposes.

4.5.3. Potential Financial Benefits of Nonprofit Mergers

As discussed in previous sections, some of the main reasons why mergers occur is because there are financial benefits that associated with merging. In this section I discuss more in detail what are these expected financial benefits and introduce the hypotheses of the essay. Nonprofit literature references the following potential financial benefits that nonprofit organizations can realize by merging:

(1) Increased operational efficiency: Mergers can lead to greater organizational efficiency by combining management and support functions, reducing staff levels, integrating physical
facilities, and increasing purchase power (Golensky & DeRuiter, 1999; Jenkins, 2000; Singer & Yankey, 1991). Efficiency gains can increase the probability of getting grants for the resulting merged organization since granting organizations often consider administrative efficiency when making their decisions on who will receive grants.

**H1: Nonprofit mergers result in higher operational efficiency**

(2) Increased and more stable funding base: Merging can result in a wider and more stable funding base for the surviving organizations for at least two different reasons. One reason is that the organization that results from the merger has access to the funding bases of the different merging organizations (Golensky & DeRuiter, 1999, 2002b). This allows the surviving organization to increase its market potential and diversify its revenues, which have been associated with increased and more stable funding (Carroll & Stater, 2009). Another commonly cited reason of why merging can result in an increased and more stable funding base is through reduced competition (Golensky & DeRuiter, 1999; Schmid, 1995). Organizations that merge are likely to operate more efficiently and will be in a better position to compete for limited resources. In addition, mergers can increase the market power of nonprofit organizations by reducing the number of organizations on the market for the same sources of funding and by increasing their control over the pricing of services (Singer & Yankey, 1991). In general, nonprofit mergers can result in greater fiscal stability (Greater New York Fund/United Way, 1981) because they can potentially help organizations to both reduce their expenses (via economies of scale) and increase their revenues (via revenue diversification).
**H2:** Nonprofit mergers result in revenue diversification

**H3:** Nonprofit mergers result in higher rates of revenue growth

Alternatively, the impact of the merger on the finances of an organization can be determined by examining the operating margin. Generally, organizations that increase their operational efficiency and their revenue growth rates are expected to have higher operating margins. However, this might not be the case if the organization also increases its programmatic expenses.

**H4:** Nonprofit mergers result in higher operating margins

Overall, the four hypotheses of this essay evaluate whether nonprofit organizations that merged it the years following the September 11 attacks—between 2002 and 2004—effectively realized the different financial benefits that are expected to result from a merger.

4.6. Data

The data I used for this chapter is a combination of the NCCS databases I used for chapters 2 and 3, additional 990 forms downloaded from Guidestar, and a list of mergers in New York State that was provided to me by the Division of Corporations of the New York State Department of State. The Division of Corporations of the New York State Department of State provided me with a database that includes the names of the organizations included in all the certificates of mergers filed in New York State between 2000 and 2013 for all types of organizations. Note this dataset is not publicly available and acquiring it required a special request to the Director of the NYS Department of State Division of Corporations, State Records and Uniform Commercial Division of Corporations. This data source is unique to this study as it is the first time that it has been used for nonprofit mergers research.
A total of 75 mergers of domestic charitable nonprofit organizations between 2002 and 2004 constitute the initial sample of the study. While the Division of Corporations database included a total of 90 mergers that resulted in nonprofit corporations, the initial sample for the study is a subset of these mergers that includes only the mergers between nonprofits that were incorporated under the New York State laws. These 75 nonprofit mergers involved at least 162 different nonprofit organizations. While the mergers usually were between two organizations, there are cases where more than two and up to five nonprofit organizations merged into one organization. Note that organizations in some subsectors are generally more likely to merge due to characteristics of the environment in which they operate. For example, organizations in the health and human services subsectors were more likely to merge in New York State. A total of 49 out of the 75 organizations in the initial sample (around 65%) were either from the health or human services subsectors.

For all the organizations that merged, I obtained the 990 financial information for at least four years before and four years after the merger from two different sources: (1) NCCS Core Files/Digitized files used for the analyses in Chapter 2 and Chapter 3; and (2) 990 forms downloaded from Guidestar to obtain information not contained in the Core Files for the reporting years after 2004. I needed to obtain the information directly from the 990 forms because the last year of information contained in NCCS’s digitized files is 2003, and the Core Files do not include some of the variables I needed for the analyses (e.g. program service and administrative expenses). As expected, the final sample of mergers was below the 75 total number of mergers during the period of the study because the 990 information was not available for all the merging organizations. This could be due to organizations failing to file Form 990. For example, if their revenues were below $25,000 they were not required to do so. For the analyses, I kept only organizations with at
least eight consecutive years of 990 data (four pre-merger and four post-merger). Note that I included longer time series for the mergers that had more years of available information. In addition, nine of the mergers included in the initial sample involved at least one private foundation and were dropped from the sample because private foundations are required to file a different tax form (990-PF). The final sample used for the analysis consisted of a total of 35 mergers of nonprofit organizations in New York State between 2002 and 2004.

Table 4.1. Construction of Mergers Sample

<table>
<thead>
<tr>
<th>Merger Sample</th>
<th>Number of Mergers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total New York State Nonprofit Mergers between 2002-2004</td>
<td>75</td>
</tr>
<tr>
<td>Public Foundations</td>
<td>9</td>
</tr>
<tr>
<td>Mergers of Nonprofit Organizations with incomplete series of 990 forms</td>
<td>31</td>
</tr>
<tr>
<td>Mergers of Nonprofit Organizations included in the sample</td>
<td>35</td>
</tr>
</tbody>
</table>

The table below summarizes the distribution by subsector of the 35 mergers of nonprofit organizations included in the sample. Notice how the great majority of the organizations in the sample are from the human services and health subsectors. This might be explained by the fact that organizations in these subsectors operate in an environment where the incentives for merging are high. However, a high proportion of health organizations in the sample can also be attributed to the fact that these organizations were more likely to have 990 information for at least eight years for all the organizations that were part of the merger.
Table 4.2. Mergers Sample by Subsector

<table>
<thead>
<tr>
<th>Subsector</th>
<th># Mergers</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Arts</td>
<td>1</td>
<td>2.9%</td>
</tr>
<tr>
<td>Education</td>
<td>1</td>
<td>2.9%</td>
</tr>
<tr>
<td>Health</td>
<td>17</td>
<td>48.6%</td>
</tr>
<tr>
<td>Human Services</td>
<td>11</td>
<td>31.4%</td>
</tr>
<tr>
<td>Other</td>
<td>5</td>
<td>14.3%</td>
</tr>
<tr>
<td>Total</td>
<td>35</td>
<td>100%</td>
</tr>
</tbody>
</table>

With the information from the different data sources, I constructed a panel data with 8 to 13 years of revenues and expenses information of all the constituents of the 35 mergers. The financial information of the constituent organizations for the pre-merger years was combined by adding together the financial information of each of the different organizations that merged. For example, the revenues of all the organizations that were part of a merger were added together for every pre-merger observation. The financial information for the post-merger years for each merger corresponds to the financial information of the surviving organization.

As an example, if merger number 1 is the result of merging organization A with organization B, where organization B ceases to exist and organization A is the surviving organization, the total revenues for merger 1 for the years pre-merger years were determined by adding the revenues of organization A and B. The revenues for the post-merger years were the revenues of the surviving organization (organization A).

The small sample size used for the analyses included in this chapter limits the generalizability of the results. Because the sample was comprised of New York State nonprofit
organizations that merged between 2002 and 2004, the results can only be generalized to mergers in New York State that merged following the September 11 attacks.

4.7. Methodology

I used an interrupted time series model to test if the nonprofit organizations that merged in New York between the years 2002 and 2004 realized the benefits of mergers referenced in the literature. Interrupted time series designs test whether an intervention, which in this case is the merger, has any effect on the dependent variable that is being studied. A relatively short time series has been considered appropriate for this type of analysis (Simonton, 1977). I ran four different regressions to test the four hypotheses of the study. The only difference between the four regressions is the dependent variable. Each of the dependent variables in the four regressions correspond to the first four hypotheses of this study which are the four expected financial outcomes of a merger.

The interrupted time series models ran were fixed effects panel data models with robust standard errors which were estimated to correct for autocorrelation within cases and heteroskedasticity between cases (Wooldridge, 2010). Note that I decided to run a fixed effects model because the Hausman test suggests that there are significant differences in the estimated coefficients between the fixed effects and random effects models (Hausman, 1978). The fixed effects models for the four regressions ran were:

1. Operational Efficiency:  
   $$\eta_{it} = \beta_1(Year)_{it} + \beta_1(Merger)_{it} + \beta_1(Merger \times Year)_{it} + \eta_i + u_{it}$$

2. Revenue Diversification:  
   $$\eta_{it} = \beta_1(Year)_{it} + \beta_1(Merger)_{it} + \beta_1(Merger \times Year)_{it} + \eta_i + u_{it}$$

3. Revenue Change:  
   $$\eta_{it} = \beta_1(Year)_{it} + \beta_1(Merger)_{it} + \beta_1(Merger \times Year)_{it} + \eta_i + u_{it}$$

4. Operating Margin:  
   $$\eta_{it} = \beta_1(Year)_{it} + \beta_1(Merger)_{it} + \beta_1(Merger \times Year)_{it} + \eta_i + u_{it}$$
Each regression tests one of the four hypothesis of the study.

4.7.1. Independent Variables

Merged: I constructed an intervention dummy (merged) to test the effects of the merger on different financial indicators. The intervention dummy was set to 0 for the years preceding the merger and to 1 for all the years following the merger. This is the key variable for most of the analyses and measures the impact of the merger on the base level (constant) of the outcome variable.

Time: This variable takes the value of 1 for the earliest year of financial information for the merging organizations and increases until the last year of financial information of the merged organizations (somewhere between 8 and 13).

Merged x Time: This interaction variable is the multiplication of the merger dummy variable and the year variable. This interaction can be interpreted as the change in the slope pre- and post-merger. Positive coefficients can be interpreted as an increase in the rate in which the outcome variable changes over time.

4.7.2. Dependent Variables

I ran four independent regressions with different dependent variables (operational efficiency, revenue diversification, revenue growth, and operating margin) to test the hypotheses of the study.

Operational Efficiency: Nonprofit organizations’ efficiency is the degree to which nonprofit organizations direct their available resources to the organization’s mission (Trussel and Parsons, 2007). The program expenses information contained in Form 990 traditionally has been used by researchers and donors to assess the efficiency of a nonprofit organization. I use the division of
program expenses over total expenses which is one commonly used as a measure of nonprofit
efficiency and has been referred to as operational efficiency (Parsons, 2007). This efficiency
measurement has been subject to much criticism. One of the main reasons it has been criticized is
that donors often center their attention on this ratio which has led to accounting manipulation;
there is evidence that suggests managers underreport administrative and fundraising expenses and
over report program service expenses (Krishnan, Yetman, & Yetman, 2006; Trussel, 2003). Because of this, the functional expenses information from Form 990 is considered unreliable
(Froelich & Knoepfle, 1996) as a measurement of an organizations’ efficiency. For example, a
study conducted by the Urban Institute’s Center on Nonprofits and Philanthropy found that for the
years 1997-1998 around 25% of the charities receiving $5 million or more in contributions
reported not having any fundraising expenses. While accounting manipulation may explain some
of these cases, not all the misreporting of functional expenses is necessarily done maliciously. A
GAO report from 2002 reported that part of the problem was that nonprofit organizations have
discretion in determining how to allocate expenses in the different functional categories.
Additionally, the report found that some nonprofit organizations were netting the fundraising
expenses (Brostek, 2003).

Despite doubts as to whether the operational efficiency ratio actually measures efficiency,
research has reported that this ratio and other similar ratios that use the program expense
information are considered by donors and granting organizations when deciding which
organization to contribute to (Weisbrod and Dominguez, 1986; Posnett and Sandler, 1999; Okten
and Weisbrod, 2000; Tinkelman and Mankaney, 2007; Tinkelman, 2009; Greenlee and Brown,
2009). Rather than the reliability of the ratio, what is more important for the analysis presented in
this chapter is the change over time of the ratio, especially after the merger occurs. Even if the
operational efficiency ratio is not reliable in the first place, what is more important is that increases in the operational efficiency ratio can be considered a positive signal because they can be related to an increase in contributions. Furthermore, it is possible that the managers of the surviving organization use a different accounting methodology to distinguish between program expenses and administrative expenses; in this case, changes in the operational efficiency ratio may reflect a change in the accounting approach rather than a change in the efficiency of operations.

**Revenue Diversification:** Empirical studies of revenue diversification in the nonprofit sector have relied on an adaptation of the Herfindahl–Hirschman Index (HHI) as a measure of diversification (Trussel, 2002; Tuckman & Chang, 1991). Tuckman and Chang (1991) first introduced the index which is estimated using the following formula:

$$H = \sum_{i=1}^{N} \left( \frac{r_i}{R} \right)^2$$

Where \( N \) is the number of revenue sources available, \( r \) is the revenue from each of the different sources and \( R \) is the total revenue. The value of the index goes from 0 to 1 and the index assumes a value of 1 where there is no revenue diversification and gets closer to 0 as revenue diversification increases. In this essay, I use HHI as the dependent variable of the regressions that test whether mergers result in revenue diversification. The index was constructed with four broad revenue categories extracted from the Form 990: contributions, program revenue, investment income, and other revenue. Note that this calculation is different from the revenue diversification measure that I used in the first essay of this dissertation where I included a total of ten different revenue categories for the calculation. For this essay, I opted to aggregate some of the categories because some of the revenue categories were changed in 2008 when Form 990 was revised. The
best way to address these changes and calculate a reliable concentration index was by using a higher level of aggregation.

The estimation of the HHI using less revenue categories has at least one disadvantage and one advantage. As mentioned before, the level of disaggregation can affect the results of the analysis and using more categories is generally preferable because more information is used (Chikoto, Ling, & Neely, 2014). However, it can be argued that, for this analysis, using a higher level of revenue aggregation is preferable due to the changes in the reporting of revenue information mentioned previously. Additionally, there are likely to be fewer inconsistencies in the way merging organizations report their disaggregated revenues when only four categories are used.

**Revenue Change:** This variable measures the rate of revenue growth and was constructed by subtracting the one year lag of total revenues from current revenues and dividing the subtraction by the lagged total revenues. Note that I adjusted total revenue for inflation to 2001 constant dollars using the Consumer Price Index. Additionally, the first time period of the time series is lost for each merger because an additional year of 990 data at the start of the time series would be needed and was not available for all the merging organizations.

**Operating Margin:** I included the operating margin variable as a way to more broadly assess the financial health of the nonprofit organization. Unlike the other dependent variables that look either at revenues or expenses, the operating margin ratio incorporates both revenues and expenses in one ratio. This is an important ratio to assess the health of any organization because nonprofit organizations need to earn a profit to be financially healthy. However, it is worth noting that in the nonprofit sector it may be inappropriate for organizations to make an excessive profit (Finkler et al., 2012) because making a profit is not the *raison d'être* of nonprofit organizations and excess
revenues could be spent pursuing the mission of the organization. I constructed this variable by first calculating the income of the nonprofit organization (total revenues minus total expenses) and then dividing this subtraction by total revenues.

4.7.3. Hypotheses Testing

The variables of the regressions that test hypotheses one to four are the intervention variable (merger) and the interaction between the intervention variable and the time variable (merger x time). While the independent variables for the different regressions stay the same, the dependent variable changes for testing each of the first four hypotheses.

The dependent variable for hypothesis number one is operational efficiency measured as program expenses over total expenses. A positive and significant coefficient of the dummy variable provides support to the hypothesis that mergers result in efficiency gains. In addition, a positive and significant coefficient for the interaction variable between the intervention dummy and the time variable indicates that the efficiency gains increase every year after the merger.

Hypothesis two was tested using HHI as the dependent variable. The intervention variable and the interaction between the intervention variable and the time variable are expected to be negative and significant which would indicate that the revenue concentration decreases after the merger (diversification increases) and that it continues to decrease every year after the merger. Alternative regressions were also estimated for this hypothesis to test the robustness of the results.

Percentage revenue growth was used as the dependent variable to test hypothesis three. Again, the intervention variable and the interaction between the intervention variable and the time variable are the key variables to test the hypothesis. Positive and significant coefficients would provide support for the hypothesis and indicate that nonprofit organizations increase their revenue.
after the merger and that this revenue increase is intensified every year after the merger. Regressions using both total revenue growth percentage and unrestricted revenue growth percentage were estimated to test the robustness of the results.

Operating margin was used as the dependent variable for testing hypothesis number four. A positive and significant coefficient of the merger variable provides support to the hypothesis that nonprofit organizations increase their operating margins after merging.

Table 4.3. Summary of Hypotheses and Operational Definitions

<table>
<thead>
<tr>
<th>Hypothesis</th>
<th>Operational Efficiency (H1)</th>
<th>Revenue concentration (H2)</th>
<th>Revenue Change (H3)</th>
<th>Operating Margin (H4)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operationalization of Dependent Variable</td>
<td>Program Expenses/Total Expenses</td>
<td>HHI</td>
<td>(Year 2 Revenues-Year 1 revenues)/Year 1 revenues</td>
<td>(Total Revenues-Total Expenses)/Total Revenues</td>
</tr>
<tr>
<td>Merged</td>
<td>+</td>
<td>-</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>Merged x Year</td>
<td>+</td>
<td>-</td>
<td>+</td>
<td>+</td>
</tr>
</tbody>
</table>

Table 4.4 displays the summary statistics for all the dependent and independent variables included in the analyses. The maximum value of the variable year is 14 which represents the maximum number of years of data included for a merger (1997-2010). Note that, depending on the 990 data availability for all the nonprofit organizations involved in the merger the time series can be as short as eight years for some mergers.

The descriptive statistics of the HHI index suggest high revenue concentrations among the merging organizations (average 0.75). While this high value can be partly attributed to the fact that
I only used four revenue categories for constructing the index, the minimum value of 0.31 suggests that, despite this shortcoming, this variable also takes low values if the revenues are diversified among the four categories. The mean for the merged dummy variable (0.53) shows that 53% of the observations were post-merger. Finally, notice that the number of observations for the revenue change variable is smaller (400 observations). This is due to the fact that two years of data are needed to calculate revenue change (data for current and lagged year).

Table 4.4. Summary of Descriptive Statistics

<table>
<thead>
<tr>
<th>Variable</th>
<th>Observations</th>
<th>Mean</th>
<th>Std. Dev.</th>
<th>Min</th>
<th>Max</th>
</tr>
</thead>
<tbody>
<tr>
<td>Year</td>
<td>435</td>
<td>6.94</td>
<td>3.70</td>
<td>1.00</td>
<td>14.00</td>
</tr>
<tr>
<td>Operating Margin</td>
<td>435</td>
<td>0.04</td>
<td>0.16</td>
<td>-1.18</td>
<td>0.67</td>
</tr>
<tr>
<td>Revenue Change</td>
<td>400</td>
<td>0.11</td>
<td>0.33</td>
<td>-0.65</td>
<td>2.63</td>
</tr>
<tr>
<td>HHI (Revenue Concentration)</td>
<td>435</td>
<td>0.75</td>
<td>0.20</td>
<td>0.31</td>
<td>1.00</td>
</tr>
<tr>
<td>Operational Efficiency</td>
<td>435</td>
<td>0.81</td>
<td>0.08</td>
<td>0.46</td>
<td>0.96</td>
</tr>
<tr>
<td>Merged</td>
<td>435</td>
<td>0.53</td>
<td>0.50</td>
<td>0.00</td>
<td>1.00</td>
</tr>
<tr>
<td>Merged x Year</td>
<td>435</td>
<td>5.22</td>
<td>5.17</td>
<td>0.00</td>
<td>14.00</td>
</tr>
</tbody>
</table>

Table 4.5 displays the pairwise correlation matrix of the independent and dependent variables included in the analysis. Notice the low correlations between most of the variables. The only high correlation between the dependent variables is between operating margin and total revenue change (0.768) which was expected because both variables are constructed using total revenue. The low correlation between the other dependent variables suggests that the potential benefits of mergers do not move in the same direction before nor after the merger.
The other variable of interest is the merged dummy variable. The high correlation between year and merger (0.84) is logical because the mergers occur during the latter years of the time series. Of importance is the extremely low correlation between the merger variable and all of the dependent variables. The highest correlation is 0.134 between merged and HHI and the lowest correlation is -0.04 between merged and operating margin. These correlations suggest that there is no clear impact of the merger on the dependent variables. The multivariate regression model provides a more complete analysis of these relationships.

Table 4.5. Correlation Matrix

<table>
<thead>
<tr>
<th>Variable</th>
<th>(1)</th>
<th>(2)</th>
<th>(3)</th>
<th>(4)</th>
<th>(5)</th>
<th>(6)</th>
<th>(7)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Year (1)</td>
<td>1.0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Operating Margin (2)</td>
<td>-.049</td>
<td>1.0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total Revenue Change (3)</td>
<td>-.064</td>
<td>-.768</td>
<td>1.0</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>HHI (4)</td>
<td>.115</td>
<td>-.015</td>
<td>.030</td>
<td>1.0</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Operational Efficiency (5)</td>
<td>.101</td>
<td>-.213</td>
<td>-.081</td>
<td>.134</td>
<td>1.0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Merged (6)</td>
<td>.841</td>
<td>-.039</td>
<td>-.076</td>
<td>.124</td>
<td>.045</td>
<td>1.0</td>
<td></td>
</tr>
<tr>
<td>Merged x Year (7)</td>
<td>.929</td>
<td>-.040</td>
<td>-.071</td>
<td>.133</td>
<td>.066</td>
<td>.954</td>
<td>1.0</td>
</tr>
</tbody>
</table>

4.8. Results and Discussion

Before examining the changes to the financial ratios of interest before and after the merger, it is important to briefly look at some basic financial statistics before and after the merger. Table 4.6 shows the average/maximum/minimum of total revenues, expenses, assets and net assets before and after the merger for all the observations in the sample. Recall that for the before-merger observations these values are the sum of the respective line item for all the constituents of each
merger. For instance, the maximum total revenue of $314 million before the merger represent the sum of the total revenues of all of the organizations that merged. The financial values after the merger correspond to the finances of the resulting merged organization. The most important takeaway of the table below is that the after-merger values are not smaller than the before merger values. This suggests that the merged organizations generally incorporated some of the revenues, expenses, assets, and net assets of all the nonprofit organizations that took part in the merger.

Table 4.6. Total Revenues, Expenses, Assets, and Net Assets Before and After Merger

<table>
<thead>
<tr>
<th>Dependent Variable</th>
<th>Before Merger</th>
<th></th>
<th></th>
<th>After Merger</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Avg</td>
<td>Max</td>
<td>Min</td>
<td></td>
<td>Avg</td>
<td>Max</td>
</tr>
<tr>
<td>Total Revenue</td>
<td>$ 30,265,227</td>
<td>$ 314,000,000</td>
<td>$ 82,967</td>
<td>$ 58,136,509</td>
<td>$ 558,000,000</td>
<td>$ 123,763</td>
</tr>
<tr>
<td>Total Expenses</td>
<td>$ 29,845,945</td>
<td>$ 299,000,000</td>
<td>$ 58,814</td>
<td>$ 56,260,558</td>
<td>$ 533,000,000</td>
<td>$ 124,601</td>
</tr>
<tr>
<td>Total Assets</td>
<td>$ 22,073,017</td>
<td>$ 297,000,000</td>
<td>$ 163,504</td>
<td>$ 47,429,808</td>
<td>$ 698,000,000</td>
<td>-</td>
</tr>
<tr>
<td>Total Net Assets</td>
<td>$ 8,284,462</td>
<td>$ (31,100,000)</td>
<td>$ 144,000,000</td>
<td>$ 15,579,563</td>
<td>$ (36,100,000)</td>
<td>$ 267,000,000</td>
</tr>
</tbody>
</table>

An initial review of the descriptive statistics of the database showed very marginal changes in the financial ratios of interest after the mergers. The table below displays the minimum, maximum, and average values for the program expense ratio, HHI, revenue change, and operating margin before and after the mergers. The only variable that experienced changes in the average
value in the expected direction was the operational efficiency ratio (Hypothesis 1). All the other dependent variables experienced changes in their averages contrary to what was expected. While this initial analysis is far from conclusive, it suggests that the potential benefits of the mergers might not have been realized. Also notice the high average revenue change before the merger (14.2%) which is indicative that many of the organizations involved in the merger might not have been experiencing serious financial distress.

Table 4.7. Descriptive Statistics of Dependent variables Before and After Merger

<table>
<thead>
<tr>
<th>Dependent Variable</th>
<th>Before Merger</th>
<th>After Merger</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Min</td>
<td>Max</td>
</tr>
<tr>
<td>Operational Efficiency</td>
<td>45.6%</td>
<td>94.2%</td>
</tr>
<tr>
<td>Operating Margin</td>
<td>-85.8%</td>
<td>67.2%</td>
</tr>
<tr>
<td>HHI</td>
<td>0.33</td>
<td>1.00</td>
</tr>
<tr>
<td>Revenue Change</td>
<td>-59.2%</td>
<td>243.1%</td>
</tr>
</tbody>
</table>

While the average change before and after the merger for three of the four dependent variables was contrary to expectations, this does not mean that all organizations included in the analysis had the same negative experience after the merger. Table 4.8 displays the number of organizations that had the expected average changes after the merger for each of the potential benefits of the merger. More mergers experienced the expected average change after the merger for the operational efficiency and operating margin dependent variables. A total of 20 observations (57.1% of the mergers) experienced an average increase in operational efficiency after the merger while 19 observations (54.3% of the mergers) experienced an average increase in their operating margin. The number of mergers that, on average, experienced a change in their HHI and revenue change after the merger contrary to the hypothesis was higher than those that experienced the
hypothesized changes. A total of 22 observations (62.9% of the mergers) increased their revenue concentration after the merger, while 23 observations (65.7% decreased their annual revenue change after the merger.

The high number of observations that, contrary to the hypothesis, decreased their revenue change after the merger could potentially be attributed to the effects of the September 11 attacks. While donations towards relief efforts increased after 9/11, some nonprofit organizations experienced declines in donations as people diverted some of their donations towards relief efforts (Lane, 2006; Yurenka, 2007). Similarly, the war on terrorism resulted in massive increases in defense expenditures and decreases in social program spending (Derryck & Abzug, 2002). In addition to the shifts in funding, some claim that the economic downturn that followed the September 11 attacks resulted in reduced individual and corporate giving to nonprofit organizations (Renz, 2002, 2003), declines in government funding (Frederick Lane, 2006), and also significantly reduced the revenues nonprofit organizations that had gotten used to robust growth of the market and relied on investment income (Guerrero & Purtell, 2011). Together, all of these factors can help explain why none of the mergers in this study experienced significant revenue growth after merging.

Overall, the table below suggests that while the expected increases in revenue diversification, operational efficiency, operating margin, and rate of revenue change are not common among the organizations that merged, some organizations may realize some benefits after the merger.
Table 4.8. Number of Organizations that Experienced Hypothesized Changes

<table>
<thead>
<tr>
<th></th>
<th>Number of Mergers with Average Increase</th>
<th>Number of Mergers with Average Decrease</th>
<th>Total Mergers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Efficiency</td>
<td>20</td>
<td>15</td>
<td>35</td>
</tr>
<tr>
<td>% Total</td>
<td>57.1%</td>
<td>42.9%</td>
<td>100.0%</td>
</tr>
<tr>
<td>Op Margin</td>
<td>19</td>
<td>16</td>
<td>35</td>
</tr>
<tr>
<td>% Total</td>
<td>54.3%</td>
<td>45.7%</td>
<td>100.0%</td>
</tr>
<tr>
<td>HHI</td>
<td>22</td>
<td>13</td>
<td>35</td>
</tr>
<tr>
<td>% Total</td>
<td>62.9%</td>
<td>37.1%</td>
<td>100.0%</td>
</tr>
<tr>
<td>Revenue Change</td>
<td>12</td>
<td>23</td>
<td>35</td>
</tr>
<tr>
<td>% Total</td>
<td>34.3%</td>
<td>65.7%</td>
<td>100.0%</td>
</tr>
</tbody>
</table>

The results of the fixed effects model are presented in table 4.9. The model only provides some marginal evidence to support Hypothesis 1. The sign of the merger coefficient for the operational efficiency regression is in the correct direction, but the coefficient is only significant at the 10% level. The magnitude of the coefficient suggests that operational efficiency is around 4% higher for merged organizations. However, the interaction of merged and year is negative and also significant which suggests that efficiency gains dissipate over time. Overall, the results consistently suggest that mergers generally do not lead to any of the anticipated financial benefits.
Table 4.9. Fixed Effects Model Financial Outcomes of Mergers

<table>
<thead>
<tr>
<th></th>
<th>(1) Operational Efficiency</th>
<th>(2) HHI</th>
<th>(3) Revenue Change</th>
<th>(4) Operating Margin</th>
</tr>
</thead>
<tbody>
<tr>
<td>Year</td>
<td>0.00405**</td>
<td>0.00127</td>
<td>-0.00214</td>
<td>-0.00649*</td>
</tr>
<tr>
<td></td>
<td>(0.002)</td>
<td>(0.004)</td>
<td>(0.014)</td>
<td>(0.004)</td>
</tr>
<tr>
<td>Merged</td>
<td>0.0338*</td>
<td>0.025</td>
<td>-0.065</td>
<td>-0.0298</td>
</tr>
<tr>
<td></td>
<td>(0.018)</td>
<td>(0.036)</td>
<td>(0.100)</td>
<td>(0.061)</td>
</tr>
<tr>
<td>Merged x Year</td>
<td>-0.00458*</td>
<td>0.00216</td>
<td>0.0027</td>
<td>0.0054</td>
</tr>
<tr>
<td></td>
<td>(0.003)</td>
<td>(0.005)</td>
<td>(0.016)</td>
<td>(0.007)</td>
</tr>
<tr>
<td>Constant</td>
<td>0.788***</td>
<td>0.707***</td>
<td>0.151**</td>
<td>0.0726**</td>
</tr>
<tr>
<td></td>
<td>(0.018)</td>
<td>(0.036)</td>
<td>(0.064)</td>
<td>(0.030)</td>
</tr>
<tr>
<td>N</td>
<td>435</td>
<td>435</td>
<td>400</td>
<td>435</td>
</tr>
</tbody>
</table>

Standard errors in parentheses
* p < 0.10, ** p < 0.05, *** p < 0.01

In previous chapters of this dissertation I have discussed the concerns about the reliability of the program expenses variable and the estimation of operational efficiency for nonprofit sector organizations. This concern also applies to the results of this analysis. While the merger coefficient was marginally significant in the operational efficiency regression, the results should be interpreted with extra care due to concerns about the reliability of the operational efficiency ratio. It is possible that increases in operational efficiency promoted by funders were among the main motivations of some of the mergers; this can result in some additional incentives to report lower administrative expenses that do not necessarily match with the organization’s actual expenses. Independently from whether organizations did or did not realize operational efficiency gains after the merger, there is some evidence to suggest that some gains were reported in the 990 forms even if they were not real.

With the exception of revenue change, the merger coefficients for the other regressions are in the opposite direction of what was hypothesized. These results suggest that mergers in New York State did not lead to revenue diversification, increase in operating margin, nor an increase in
the revenue change rates. A possible explanation is that mergers are disruptive to any organization in the short term and it takes some time for organizations to adjust and start realizing the potential financial benefits. For example, merger-related expenses during the first years before and after the merger likely affect the results. Both the operational efficiency ratio and the operating margin variables could be negatively affected by administrative expenses derived from the merger process. Another plausible explanation for this result is that organizations of mergers that were completed during the years 2002-2004 in New York State were likely impacted to some degree by the 9/11 attacks and the economic downturn that followed. The September 11 attacks was an unforeseeable event that has been said to have affected the nonprofit sector in several ways. Organizations in Lower Manhattan were directly impacted due to their proximity to the site of the terrorist attacks. Some organizations had to close their offices in the short term because their offices were physically damaged (Derryck & Abzug, 2002). Others organizations in New York City were affected because the demand for their services decreased as many people were afraid to leave their homes.

While the panel data model does not provide evidence to support the hypotheses regarding the financial benefits of merging, this does not necessarily mean that nonprofit organizations never realize these benefits after merging. This means that the positive financial effects of mergers were not realized by mergers in New York State between 2002 and 2004.

4.9. Limitations

An important limitation of this study has to do with the unavailability of Form 990 data for a significant amount of the organizations in the sample. It is unclear whether the information is missing at random or if the information is missing for a specific reason that can impact the results of the analyses. Two reasons that can explain the unavailability of these data come to mind. First, it is possible that the information for some mergers is unavailable because the merger was
unsuccessful and the merged organization went out of business. If this is the case, it is likely that the inclusion of these organizations would have provided further proof that the financial benefits of mergers are generally not realized. Another plausible explanation for the unavailability of the data is that some of the organizations that merged were very small and not required to file Form 990. It is not possible to conjecture what would be the impact of the inclusion of these organizations in the analysis.

Another shortcoming of the analysis presented in this paper is that I do not include a control group to test whether organizations that merged fared better that organizations that did not merge. It is possible that, although organizations that merged did not present significant post-merger improvements of the financial ratios examined, the ratios were significantly better than they would have been if the merger did not occur. As discussed before, it is plausible that this is the case given that some of the years post-merger are after the 2007 recession and organizations that merged could have done better during this time as a merged organization. However, given that this is a counterfactual option, as the merger did occur, testing would require constructing a control group of organizations that did not merge with very similar characteristics of the organizations that merged. A way to address this limitation would be to use propensity score matching techniques to construct such a control group.

Another limitation of the study is the length of the time series used to determine the financial benefits of a merger. As discussed before, it is possible that a merger does not realize many benefits short term because it is a disruptive process but, in the long term, financial benefits can be realized as the resulting organization adjusts to the new reality. The number of years post-merger included for the mergers analyzed in this essay ranges from 4 to 7 years. While this number of years is appropriate for interrupted time series studies, longer time series are generally preferred.
A study using longer time series might reveal that financial benefits are realized only several years after merging.

As noted before, the size of the sample is another limitation that diminishes the generalizability of the results. To the extent that the organizations excluded might not be missing at random, sampling bias may be a problem. The results of the analyses are—at the very least—generalizable to the sample which is comprised of the majority of the organizations that merged in New York State during the period analyzed and constitute a valuable contribution to our understanding of the financial outcomes of mergers.

Finally, it is worth noting that this study did not examine what could be the most important benefit of a merger, that is, the opportunity to improve service delivery: Nonprofit organizations can take advantage of economies of integration which is “the combination of distinct related processes or services within the confines of a single organization” that may lead to “better coordination, linked services, or co-location which, in turn, will likely lead to higher levels of service, treatment and benefit for the client” (Jenkins, 2000, p. 10). For example, the merging organizations can potentially have access to a larger skill base and gain access to expertise from the different organizations involved in the merger. This increases the organizational capacities as the new organization has more diversified staff roles, is able to attract and retain talent, combines innovative practices from the merging organizations, and streamlines operations. In addition, nonprofit organizations that merge can potentially increase their effectiveness by offering a broader range of services to better serve their customers (Greater New York Fund/United Way, 1981). Whether this benefit is realized by the mergers in NYS is not tested in this paper, as its focus is on the financial benefits.
4.10. Robustness Test

I conducted a robustness test to address the first limitation referenced in the previous section. To control for the effects that the economic recession might have had on the financial ratios included as dependent variables on the regressions, I included a dummy variable that takes the value of 1 for the years 2008, 2009, and 2010. The inclusion of this variable did not affect the overall findings of the regressions as all of the variables of interest remained insignificant at the 5% level. The only noteworthy change is that the merger variable in the operational efficiency regression was not significant at the 10% level as it was in the original regression. Note that the dummy variable (recession) was also found insignificant across all regressions which suggests that the great recession did not negatively impact the ratios of interest of the mergers.

4.11. Conclusion

Supporters of nonprofit mergers often emphasize the financial benefits that can be realized by merging as one of the most important motivations to merge. The empirical analysis presented in this paper suggest that nonprofit mergers in New York State are not generally associated with organizations facing financial problems, and that mergers rarely result in increased operational efficiency, increased revenue diversification, improved operating margins and faster rates of growth. However, these results should not be interpreted as evidence against nonprofit mergers. They should be interpreted as what they are: evidence that the financial benefits of mergers were generally not realized for nonprofit organizations in New York State that merged between 2002 and 2004. It is possible that merging organizations need a longer period to adjust to the changes that come with the merger and that the benefits are only realized after more than four years of merging. More importantly, the fact that the financial benefits are not realized in the short term does not say anything about the non-financial benefits from merging, those benefits that result in
increases in the effectiveness of the nonprofit organization achieving its mission, even allowing organizations that merge to continue delivering programs/services that would otherwise would have been discontinued.

For example, independent from whether a merged organization realizes any financial benefits, the fact that organizations whose survival is at risk may continue to deliver programs and services after the merger can be interpreted as a positive outcome. It may be the case that the more financially stable organization in a merger cross-subsidizes the programs and services delivered by a struggling organization. While the finances of the merged organization are not likely to significantly increase with this arrangement, the outcome of the merger is the avoidance of considerable reductions in program and service delivery that might have resulted if merged organizations would have ceased operating without merging.

What is clear from this analysis is that nonprofit organizations considering merging should not have false expectations about short term outcomes of mergers. The cases when the merger resulted in operational efficiency gains, increased revenue changes, better operating margins, and more revenue diversification are the exception and not the rule. Qualitative case studies of the mergers that actually resulted in the anticipated financial benefits can further our understanding of mergers by identifying some of the common factors that could have led to a more successful experience.

4.12. References


180


Chapter 5: Overall Conclusions

I started this dissertation with the objective of testing the perception that the terrorist attacks of September 11 meaningfully affected the finances of nonprofit organizations around the country. However, the overall results suggest that nonprofit organizations found ways to mitigate the risk and operations were hardly impacted. These results remind us of the resiliency of the nonprofit sector (Salamon, 2003) which has continued to increase in number of organizations as well as total revenues and expenses despite catastrophic events such as the September 11 attacks.

Research on nonprofit organizations’ exposure to “event risk” leads to a better understanding of the threats that nonprofit organizations face that can prevent them from accomplishing their mission and offers strategies that managers can follow to minimize this risk. The overall results of the three essays from this dissertation are a step in this direction. They are meant to help practitioners and scholars better understand nonprofit risks and offer viable strategies to deal with them. The next sections of this chapter elaborate on the implications of the dissertation’s findings for theory, management, policy, and research.

5.1. Implications for Theory

One of the main objectives of this dissertation was to contribute to the development of an overall theory of nonprofit risk that incorporates event risk. While the results do not confirm that one event such as 9/11 can significantly impact the whole nonprofit sector, this does not mean that they can be dismissed. Organizations are at risk of events that can affect their operations and, while data suggests one event is unlikely to significantly affect the whole subsector, some organizations can and do feel the impact of unexpected events and need to know what strategies can help them minimize the impact.
The nonprofit finance literature has developed theories that lead to strategies nonprofit managers can adopt to reduce risks: nonprofit financial vulnerability theory and the benefits theory of nonprofit finance. The results of this dissertation provide empirical support to these two theories which take into consideration some of the particularities of the nonprofit sector and that the nonprofit finance field can call its own. As nonprofit management studies advance, it is important for the field to construct its own theories that acknowledge the distinct nature of the sector and that incorporate its intricacies. Some of the characteristics of the nonprofit sector that make it unique include the legal restrictions on the distribution of earnings and assets, the double bottom line, the reliance on diverse revenue sources, the ability of some organizations to solicit tax-advantaged donations and, perhaps most importantly, the multiplicity of the organizations in the sector.

Nonprofit financial management theories are scarce and it is encouraging to find evidence to support two theories developed specifically by nonprofit scholars. The findings of this dissertation provide support to the main postulates of the established theory of nonprofit financial vulnerability (Chang & Tuckman, 1991) and the emerging benefits theory of nonprofit finance (Fischer et al., 2010; Wilsker & Young, 2010). One strength of these theories is that they incorporate some of the distinctive characteristics of the nonprofit sector discussed before. For example, the definition of financial vulnerability proposed by Tuckman and Chang incorporates the double bottom line of nonprofit organizations by stating that a financially vulnerable nonprofit organization is one that cuts back on programs/services (mission bottom line) after experiencing a financial shock (financial bottom line). The benefits theory of nonprofit finance acknowledges the heterogeneity of the sector by establishing a relationship between the nature of the programs/services offered by a nonprofit and the types of revenues it attracts.
The results of the third essay of this dissertation do not provide support to any particular theory. However, they expose the importance of acknowledging the distinctive characteristics of the nonprofit sector for developing sound theory. The hypotheses of the third essay did not acknowledge the double bottom line of the nonprofit sector and focused on the financial bottom line of the nonprofit mergers.

An overall theory of nonprofit risk builds upon theoretical advances already made by nonprofit finance scholars. This dissertation adds to the limited body of empirical evidence by testing the validity of some of the existing theories at a moment in time when an external event had the potential to increase the risk faced by nonprofit organizations. According to the nonprofit finance theories referenced, there is evidence to suggest that nonprofit risk is generally lower when the revenues of a nonprofit organization correlate with the nature of the goods/services offered, when the organization has higher operating margins, more net assets, and is less leveraged. In addition, empirical research also suggest that the explanatory power of some of these factors varies considerably among organizations of different subsectors.

Finally, while nonprofit finance scholars should take special interest in theories and methodologies developed specifically for the field, this does not mean that those of us interested in nonprofit finance should not look at other fields for inspiration. Nonprofit studies are inherently multidisciplinary, and scholars in this field should be willing to learn from a wide range of areas of study. Nonprofit finance in particular has a lot to learn from long established areas of study such as public finance and government finance. However, theories from these areas cannot be embraced without a critical view and without adaptations that take into consideration the nature of the nonprofit sector. As an example, in this dissertation I borrowed the event risk concept and the methodology from corporate finance. While the main idea and methodology was derived from
corporate finance, the concept of risk adopted by this dissertation incorporates the mission bottom line and the methodology needed to be adapted to the data available to study nonprofit organizations.

5.2. Implications for Management

The most relevant management implication of the dissertation results is that there is no one-size-fits all strategy that all nonprofit organizations can follow to reduce the risk of revenue disruptions that can lead to program and service cutbacks. The combined results strongly suggest that subsectors matter. Depending on the subsector in which a nonprofit organization operates, the people who manage it can benefit from applying different strategies in order to reduce the risk. The array of strategies available include diversifying the revenue mix, concentrating the revenue mix, increasing operating margins and accumulating net assets in anticipation of potential events, and maintaining the organization’s liabilities at levels that do not commit a significant amount of future revenue and cash flows. Different combinations of these strategies appear to result in lower levels of risk for organizations in some sectors than others. The table below combines the results of the first two essays to highlight the strategies that can work better for particular subsectors.
Table 5.1. Management Implications Summary: Which strategies Work for Each Subsector?

<table>
<thead>
<tr>
<th>Subsector/Strategy</th>
<th>Diversify Revenues</th>
<th>Concentrate Revenues</th>
<th>Seek More Government Revenues</th>
<th>Seek More Program Service Revenues</th>
<th>Reduce Reliance On Direct Contributions</th>
<th>Affiliate With Other Nonprofit Organizations</th>
<th>Increase Operating Margins</th>
<th>Increase NA</th>
<th>Increase Operational Efficiency</th>
<th>Reduce Leverage Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>Arts, Culture, and Humanities</td>
<td>YES</td>
<td>NO</td>
<td>NO</td>
<td>YES</td>
<td>NO</td>
<td>YES</td>
<td>YES</td>
<td>NO</td>
<td>NO</td>
<td>YES</td>
</tr>
<tr>
<td>Education</td>
<td>NO</td>
<td>YES</td>
<td>YES</td>
<td>YES</td>
<td>NO</td>
<td>YES</td>
<td>YES</td>
<td>NO</td>
<td>YES</td>
<td>NO</td>
</tr>
<tr>
<td>Environment and Animals</td>
<td>YES</td>
<td>NO</td>
<td>NO</td>
<td>YES</td>
<td>YES</td>
<td>NO</td>
<td>YES</td>
<td>YES</td>
<td>NO</td>
<td>NO</td>
</tr>
<tr>
<td>Health</td>
<td>NO</td>
<td>YES</td>
<td>NO</td>
<td>NO</td>
<td>YES</td>
<td>NO</td>
<td>YES</td>
<td>YES</td>
<td>YES</td>
<td>YES</td>
</tr>
<tr>
<td>Human Services</td>
<td>NO</td>
<td>YES</td>
<td>YES</td>
<td>YES</td>
<td>NO</td>
<td>YES</td>
<td>YES</td>
<td>NO</td>
<td>YES</td>
<td>YES</td>
</tr>
<tr>
<td>International, Foreign Affairs</td>
<td>YES</td>
<td>NO</td>
<td>NO</td>
<td>NO</td>
<td>NO</td>
<td>YES</td>
<td>YES</td>
<td>NO</td>
<td>NO</td>
<td>NO</td>
</tr>
<tr>
<td>Mutual/Membership Benefit*</td>
<td>NO</td>
<td>NO</td>
<td>NO</td>
<td>NO</td>
<td>NO</td>
<td>NO</td>
<td>NO</td>
<td>NO</td>
<td>NO</td>
<td>NO</td>
</tr>
<tr>
<td>Public, Societal Benefits</td>
<td>NO</td>
<td>NO</td>
<td>NO</td>
<td>NO</td>
<td>YES</td>
<td>YES</td>
<td>NO</td>
<td>NA</td>
<td>YES</td>
<td>NO</td>
</tr>
<tr>
<td>Religion Related</td>
<td>NO</td>
<td>NO</td>
<td>NO</td>
<td>YES</td>
<td>NO</td>
<td>YES</td>
<td>NO</td>
<td>NO</td>
<td>NO</td>
<td>NO</td>
</tr>
</tbody>
</table>

YES=Empirical evidence suggest that strategy reduces level of risk
NO=Empirical evidence does not suggest that strategy reduces level of risk
The overall results suggest associations between the nature of the goods/services provided and the preferable revenue strategies for nonprofit organizations. However, the results also reveal the higher risks associated with relying on direct public contributions, a highly volatile revenue source. The results also draw attention to diversification/concentration of revenue as another interesting example of management strategies that can reduce financial risk. The results of the first essay suggest that the degree of diversification and concentration of revenues is related to risk for organizations for most nonprofit sectors. Contrary to the common belief that diversification is a strategy nonprofit organizations should always follow to reduce risk, the results suggest that this is not always the case and, in some cases, revenue concentration may reduce risk. These results can help managers plan and implement revenue strategies for the organizations they manage. However, given the nature of the goods/services offered by some nonprofit organizations, managers should be cognizant of the types of revenues that their organization is more/less likely to attract.

The results suggest that nonprofit mergers do not deliver the financial results that are generally expected. These results should not be surprising given the high rate of merger failure (between 70% and 90%) found in the for-profit sector (Christensen et al., 2011). If improving the finances of the merged organization is the ultimate goal of a merger, then managers should make a careful consideration of whether they should push for mergers because the evidence suggests that the financial promises of mergers are generally not realized.

5.3. Implications for Policy

Federal, state and local governments have a strong interest in the health of the nonprofit sector because it represents an important share of the U.S. economy. They also rely on the sector to help them address major policy issues and deliver essential social services. While the results of
this dissertation make the case for certain strategies nonprofit organizations can follow to reduce risks, these are strictly managerial choices for which policy should not and cannot play a role.

However, policies that facilitate and incentivize research can contribute to our understanding of key issues of the sector such as the ones explored in this dissertation. This way, government-sponsored empirical research can provide information to managers so that they can make better decisions at the nonprofit organization level.

For example, in order to increase the transparency of nonprofit organizations and encourage independent research of nonprofit organizations, the IRS should make datasets publicly available with the information reported by all nonprofit organizations. Many government agencies have taken steps towards transparency and accountability, yet the IRS does not facilitate access to Form 990 data. Although the 990 forms filed by nonprofit organizations are publicly available by law, access to databases with longitudinal/cross-sectional Form 990 information is limited. Recent Form 990 filings of nonprofit organizations are readily available online in sites such as GuideStar but longitudinal/cross-sectional databases are only available for a fee from organizations such as the National Center for Charitable Statistics. One of the main reasons behind limited access to the data can be traced to the way the IRS makes the Form 990 information available to the public. Only the images of all the filings are available from the IRS, which means watchdog organizations have to expend resources to enter the information in order to produce computer ready datasets for analyses. Due to the extensive length of the form and the large number of nonprofit organizations that file every year, only a subset of the fields are included in the databases available for a fee. To the best of my knowledge, the only exception are the digitized files that contain all the information from the 990 forms for all filing nonprofit organizations, but only for years 1998-2003.
5.4. Implications for Research

The results of this dissertation contribute to the study of nonprofit finances and, in particular, our understanding of the financial risks nonprofit organizations face. The overall findings are a contribution to an area of research that has been scarcely studied and where more work is still needed.

The results suggest strategies that managers of nonprofit organizations in different subsectors can adopt to recognize and manage risks. These findings make the case for more in-depth subsector analysis of nonprofit finances to identify the intricacies of each subsector’s finances. For example, subsector particularities can be found not only in how a nonprofit organization earns its revenue, but also in other financial decisions such as how to spend and borrow money. In addition, further research may also find significant differences within the broad subsectors classification used for this dissertation. For example, the education subsector includes a wide variety of education-related organizations such as elementary and secondary schools, vocational and technical schools, and higher education colleges and universities, libraries, and alumni associations, among many others.

The results also suggest that organizational characteristics such as size are strongly associated with financial risk. This finding is very relevant for the study of nonprofit finances because there is less information available for smaller nonprofit organizations and the analyses of 990 data can hardly be representative of smaller organizations. Organizations with revenues less than $50,000 are only required to file Form 990-N which does not include any financial information. Organizations with revenues less than $200,000 and total assets at the end of the tax year less than $500,000 are only required to file Form 990-Z which includes significantly less information than the Form 990. Constructing a stable longitudinal cross sectional database with
enough consecutive years of Form 990 filings to reliably capture the volatility of nonprofit revenues and expenses was a challenge due to the lack of complete information of many small nonprofit organizations. Research on nonprofit risk must search for methods to overcome this hurdle and assure that the findings are more generalizable to small nonprofit organizations.

Issues with the reporting of program expenses included in Form 990 deserve special attention and introduce serious limitations to the research of nonprofit finances. The inquiry into money nonprofit organizations programmatic spending versus how much they spend on administrative expenses is a fair question, and one that can help better understand nonprofit organizations. However, the program expenses reported on the Form 990 are often not reliable and thus the operational efficiency ratio can be misleading. In this respect, three well known nonprofit watchdog organizations (Better Business Bureau, Guidestar, and Charity Navigator) started a campaign in 2013 called The Overhead Myth meant to show that the overhead ratio (a measure complementary to the operational efficiency ratio) is a poor measure of the performance of a nonprofit organization. The analyses from the last two essays in this dissertation use program expense ratio information to calculate ratios meant to test hypotheses. Although the results only show a very small association between administrative expense ratios and risk and changes in operational efficiency after a merger, it is not clear whether this is due to unreliable data or the lack of association. This issue can potentially be addressed with research based on audited financial statements and annual reports rather than information derived from Form 990. For instance, financial statements and annual reports of a limited number of nonprofit organizations can be found in the Guidestar Premium Service. However, the statements and reports available through this service are voluntarily provided by nonprofit organizations and hence very scarce.
Finally, research about mergers in the nonprofit sector is limited. The analyses presented in this dissertation are an important contribution to an area about which we know so little and raise important questions about the advisability of nonprofit mergers. The empirical tests that I ran for this dissertation did not provide support to any of the hypotheses regarding the financial benefits expected from mergers and it is possible that, although not significantly improving the finances of the merged organization, mergers do enhance the service/goods delivery and help nonprofit organizations address their mission bottom line. We very much need nonprofit scholars to place more attention on nonprofit mergers, not only to grasp the non-financial benefits that can result, but also to better comprehend the process and the factors that affect their success.

5.5. References


