
Revenue Structure and Nonprofit Borrowing

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The capital structure of nonprofit organizations plays a crucial role in their sustainability and development. This article explores the extent to which revenue diversification is incorporated into the leverage decision. In addition, this study investigates whether government grants have an impact on the long-term liabilities of nonprofit organizations. A model of nonprofit borrowing is proposed and examined with a national sample of arts, culture, and humanities nonprofit organizations. Model estimates show that nonprofit organizations with higher degree of revenue diversification are more likely to issue debt, but do not necessarily have higher debt ratios. Arts organizations with more government financial support are also more likely to issue debt and to have higher leverage ratios.

Keywords: *revenue diversification; nonprofit capital structure; debt financing; government subsidy*

1. Introduction

Nonprofit organizations may use either a pay-as-you-go financial strategy, or borrowing, to finance capital expenditure. The advantage of debt financing is that it distributes costs across the useful life of a capital asset, and therefore current users do not bear the entire cost, avoiding the depletion of large resources that are necessary for daily operation. Pay-as-you-go financing requires an organization to initially commit a significant amount of resources, but eliminates the need to dedicate future revenues to pay for debt service requirements. Many nonprofit organizations use a

Author's Note: We thank the journal editor and two anonymous referees for constructive comments.

mix of these two financing methods, which composes the capital structure of a nonprofit organization.

The capital structure of nonprofit organizations plays a crucial role in their sustainability and development. So far, only a few scholars have researched the capital structure of nonprofits. The traditional sources of revenues for nonprofit organizations are fees, grants, donations, and investment income. There are a few studies that suggest that the mix or balance of multiple revenue streams may boost the financial strength of nonprofits by stabilizing the revenue streams, thus reducing financial risks to the entity (Chang and Tuckman 1994; Frumkin and Keating 2002). However, little has been revealed about whether and how the revenue structure influences an organization's borrowing behavior. In addition, government grants are an important funding source for some nonprofit subsectors, particularly social service organizations. Increased government funding may potentially lead to a stronger financial position and greater debt capacity, and so may affect the amount of long-term liability of nonprofits.

The purpose of this paper is to investigate the factors shaping the capital structure of a nonprofit. In particular, this study examines the extent to which revenue diversification and governmental grants are incorporated into the leverage decision. Using data from a national sample of Internal Revenue Service (IRS) Statistics of Income (SOI), an empirical model of nonprofit borrowing is proposed and tested. Findings from this study add to the limited literature on nonprofit capital structure and provide additional insight into the nonprofit decision-making process with respect to debt financing.

In the next sections, a broad literature review is provided from the fields of corporate finance, public finance, and nonprofit financial management. Then, a conceptual framework on revenue volatility and debt is discussed in the context of nonprofit organizations. Next, hypotheses and a model are proposed, followed by a discussion of the findings and policy implications.

2. Some Relevant Literature

2.1. Corporate Capital Structure Theory

Capital structure is defined as the combination of financing methods, such as debt or equity (Bowman 2002). The main stream of nonprofit capital structure research focuses on explaining the capital structure of nonprofit organizations from two competing corporate finance theories: trade-off theory vs. pecking order theory.

The trade-off theory states the market value of a firm is the sum of the value of the firm financed entirely through equity and the present value of the tax shield, subtracting the present value of financial distress costs. Based on this theory, the optimal level of debt is determined by balancing the benefits of interest cost deductions from using debt finance against the costs of distress resulting from debt (Modigliani and Miller 1958). However, the trade-off theory is far from satisfactory in explaining the debt ratios of many corporate firms and industry sectors.

Pecking order theory serves as an alternative theory to explain how firms choose among the three components of capital structure: internal revenues, debt, and equity. The assumption of information asymmetry provides the basis for the pecking order (Myers and Majluf 1984). With this assumption, investors will be wary of those firms that use external resources to finance their projects because investors do not know whether the firm has been overpriced. To guard against the potential loss, lenders and stockholders will require a premium for supplying capital. Generally, lenders have dominant claims on a firm's assets over current stockholders, and hence they are rewarded with a lower premium than stockholders (Eger 2004). This theory predicts that firms will prefer to use retained earnings to finance projects because of relative lower cost, debt second, and stock as a last resort (Myers and Majluf 1984).

2.2. Public Finance Theory

There are similarities between public debt and nonprofit debt in that they are both used to finance capital infrastructures, which usually require lumpy resources and are hardly amortized by regular cash flow. It hence raises the concern for solvency of issuers. Also, from the institutional perspective, both government and nonprofit organizations are mission-oriented and focus on sustainability rather than profit. Last, both can borrow at a tax-exempt rate for permissible purposes. The research on state debt and the financial behavior of public authority may contribute to our understanding of nonprofit capital structure.

In many public debt studies, intergovernmental funds have emerged as an important factor in determining the patterns of state debt financing. It is suggested that the function of intergovernmental transfer is not only limited to supplementing local programs but also to stimulating the subnational borrowing (Clingermayer and Wood 1995). Clingermayer and Wood (1995) show that, in a static dimension, own source revenue and intergovernmental funds have a positive impact on debt, whereas in a dynamic dimension the

two components of state revenues act in an opposite direction with debt. This can be explained in an intuitive way. In the short term, governments with higher revenues are willing to take on higher level of debt, while in the long term, governments with growing own source revenue or continuing intergovernmental support increase in financial strength and decrease in borrowing because there is less need for debt financing.

To increase the debt capacity and to match the ever-growing need for infrastructure, state and local governments create public authorities with different functions. Although these special authorities are chartered and funded by their parental governments, they enjoy corporate-like freedom in their daily operation and management (Smith 1974). In this sense, public authorities retain features of government agencies, private firms, and nonprofit organizations (Mitchell 1991). The most common debt issued by public authorities is the revenue bond, which is usually backed by a revenue stream of payment from fees, charges, subsidies, or a special tax (Fabozzi, Fabozzi, and Feldstein 1995). The revenue components of public authorities are similar to those of nonprofit organizations in that nonprofit organizations may issue debt supported by fee revenues, but they may also attract donations and grants from individuals or other entities. Nonprofits do not have the power to tax. Nevertheless, the way that nonprofits use debt to finance their capital assets could be similar to that of public authorities. From this standpoint, the study on borrowing behavior for public authorities could shed some light on our understanding of nonprofit capital structure.

Applying corporate finance theory, Eger (2004) studied the financial behavior of transportation authorities. Based on the prediction from pecking order theory that entities finance their capital with internally generated funds first and use debt only when internal resources have been exhausted, he hypothesized that the increased amount of internal revenue should lead to a reduction in debt issuance. Based on the perception that public transportation authorities are heavily subsidized by their affiliated governments, he proposed that the reliance on governments for financial assistance measured by government subsidies will increase the size of debt. The empirical findings provide strong support for both hypotheses, which indicates that, although to some extent, public authorities are reliant on governmental subsidies, the role of own-source revenues with respect to debt issuance is still very important. It affects the amount of debt outstanding, but acts in an opposite direction with government funds.

This literature on public debt reveals that own source revenue and government subsidies affect the public borrowing decisions of public authorities. Similarly, government subsidies to nonprofit organizations may influence

the use of debt. Nevertheless, the government relationship with nonprofit organizations is potentially quite different than transportation authorities. State and local governments may choose to finance transportation needs through the creation of an authority, and although the authority is a separate entity, the commitment of the state and local governments to provide continuing support is probably much stronger than the funding commitments between governments and nonprofits.

2.3. Research on Nonprofit Capital Structure

Although a number of studies on capital structure have been conducted on the corporate side, little relevant research has been focused on nonprofit organizations. The main reason is that there exist substantial differences between nonprofit finance and corporate finance. Nonprofits usually depend on four general types of revenue to support their mission-related work: private contributions, including individual and corporate donations and foundation grants; funding from government; commercial activity, which might include selling goods and services related or unrelated to the nonprofit's mission (Froelich 1999); and investment income from endowments and other investments. Because nonprofit organizations do not have owners, and the source of external equity to non-profits is philanthropy (Sloan et al. 1988), they will not generate dividends in real dollars. In addition, nonprofits can borrow at a tax-exempt rate. The benefit of lower interest costs from the tax-exempt bond market would potentially bias nonprofits toward debt. However, donors may monitor or restrict how the donated assets are used, and oftentimes these charitable donors would expect the nonprofit boards to be more risk averse regarding debt issuance than corporate counterparts (Denison 2005; Fama and Jensen 1983), which causes nonprofit executives and boards to be hesitant to issue debt. Yetman (2006) argues that "nonprofits have an internal financing pecking order caused by the relative costs of their alternative financing sources" (255), and they consider the total cost of a financing alternative against the expected benefits of a new project. Unfortunately, the empirical research has had a difficult time pinpointing the pecking order preferences among nonprofit organizations.

Among the current literature on the debt of nonprofit organizations, most studies look at hospitals. Because hospitals have somewhat stable revenue streams through providing a diverse set of health services, it is reasonable that they rely more on borrowing to finance their capital equipments. Based on the observations of some nonprofit hospitals, Wedig et al. (1988) find

that bankruptcy risk, if measured by the variance of earnings, will reduce the leverage.

Scholars have also investigated, with inconclusive results, the two competing theories of corporate finance as applied to the nonprofit sector. Wedig et al. (1988) find support for static trade-off theory by investigating a mixture of private, government, and nonprofit hospitals, while Bacon (1992) looks at a sample of nonprofit hospitals, and tends to accept the pecking order theory.

Based on Bacon's equation, Bowman (2002) proposed a revised model of nonprofit borrowing with a larger and enriched data set that includes hospitals, colleges and universities, arts and cultural organizations, and human service agencies with assets over \$10 million. The key findings from his study show that earnings, measured by mean of return on investment, have a positive relationship with leverage, whereas risk or variability in earnings is negatively correlated with leverage; also, well-endowed nonprofits issue more debt relative to their physical assets. This finding is consistent with the static trade-off hypothesis that "borrowing must increase with earnings to absorb ever increasing amounts of free cash" (Bowman 2002), but must also decrease with the level of risk. Another noteworthy finding is that public support negatively affects the leverage ratio, which indicates that donation reduces the need to borrow, and donors may also feel less comfortable towards increasing leverage.

Another study on the nonprofit capital structure is by Denison (2005), who investigated the factors that influence the likelihood that a nonprofit organization would issue long-term debt. His study suggests that total assets, total revenues, and program revenues increase the probability that an organization uses debt financing strategy, while investment income has the countervailing effect. Also, the organization mission in terms of National Taxonomy of Exempt Entities (NTEE) classification is a predictor of debt usage.

3. Limitations from Previous Research and Hypotheses

Past research generally seeks to explain nonprofit capital structure using a set of factors, including revenues, assets, risk, size, executive compensation, and organizational type, and reaches inconclusive findings. Their debates mainly focus on the choice between trade-off and pecking order theory to explain the capital structure of nonprofits. Two major limitations emerge from previous empirical research. First, it fails to consider

the revenue structure as a whole: A balanced use of different revenue sources could enhance the overall financial strength of an organization by lowering the financial risk, which may in turn affect its leverage. Second, it has largely ignored the role that governmental grants play in affecting the capital structure of nonprofits.

3.1. Revenue Diversification and Financial Stability of Nonprofits

In an era in which financial sustainability is a fundamental imperative, revenue diversification has been considered one of the most prominent and well-accepted ideas about finance. We can find the justification from two disciplinary perspectives: dependence theory and finance theory.

The basic idea behind resource dependence theory is that, to survive, an organization should be able to acquire and maintain resources (Pfeffer and Salancik 1978), which leads to a dependence relationship between resource suppliers and users. According to Froelich (1999), "the degree of dependence experienced by an organization is determined by the importance and concentration of resources provided." One approach to manage the dependencies is by acquiring and maintaining alternative resources. In the context of nonprofit management, multiple revenue sources may enable organizations to protect themselves from the turbulence of a single revenue source. The move towards diversification may be perceived as a way to reduce resource dependence on a single revenue source and also preserve organizational autonomy (Chang and Tuckman 1994).

As for finance theory, the portfolio theory in the field of risk management indicates that financial risk can be reduced by combining a mix of security holdings, because it helps to hedge against the loss of any single holding while enabling the growth of the portfolio over time (Frumkin and Keating 2002). A similar rationale can be applied to the revenue structure of a nonprofit organization. A mix or balance of different revenue sources can be a great strategy to increase revenue stability and reduce the financial risk of a nonprofit organization. Such stability is realized by developing multiple revenue sources that are imperfectly correlated (Chang and Tuckman 1994). The downside of revenue diversification is that it may increase the administrative and fundraising costs (Frumkin and Keating 2002). In all, revenue diversification as a financial strategy has been broadly embraced within nonprofits, and there is evidence that a diversified revenue structure may increase the financial health and sustainability of a nonprofit (Chang and Tuckman 1994).

Another strand of literature from finance suggests that achieving greater debt capacity is one of the potential benefits of diversifying businesses within a firm. This benefit arises from combining businesses with earnings streams that are not perfectly correlated and hence reducing the volatility of revenue and profit. This coinsurance effect provides diversified firms with greater debt capacity than those single-segment firms. The increased debt capacity creates values for firms by allowing them to issue more debt and augmenting the values of tax shields related to debt financing. Therefore, in terms of the coinsurance effect, leverage is expected to have a positive relationship with the degree of firm diversification (Berger and Ofek 1995; Menéndez-Alonso 2003). We may expect the same relationship about leverage and revenue diversification to exist in nonprofit organizations. Specifically, we hypothesize that the higher the degree of revenue diversification, the higher the leverage of a nonprofit organization.

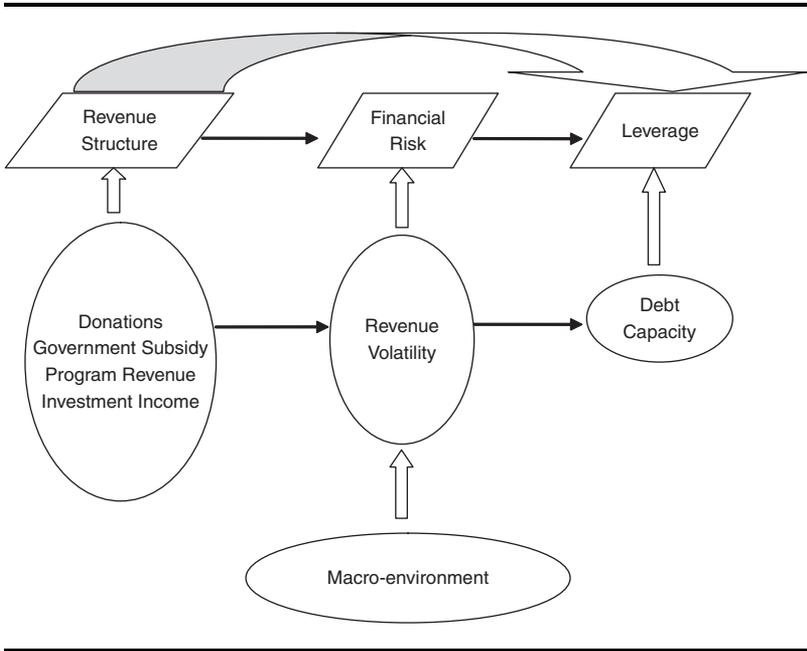
3.2. Government Support and Nonprofits

Bolton and Freixas (2000) studied the capital structure of corporate firms under the situation of information asymmetry. They proposed that the riskiest firms, such as start-ups, are constrained to use equity because other sources of funding are hardly available; the firms with medium risk usually take out bank loans as a finance option; the safest firms have a strong proclivity to choose debt financing to avoid the intermediation costs created by banks.

According to Boris and Steuerle (1999), government subsidies can have crucial and long-lasting effects on the culture and range of services of nonprofits through providing continuing funding. Subsidies have become the essential funding source for many nonprofit agencies, such as social and human service agencies. One major advantage of this type of funding has been characterized as “institutional entitlement,” which suggests its continuity, stability, and predictability (Froelich 1999; Gronbjerg 1993; Reiner 1989). Because of this feature, reliance on government funding can serve as an important component in a revenue portfolio to minimize financial risk (Kingma 1993).

Given the prediction that the safest firms prefer to use debt to finance their capital assets (Bolton and Freixas 2000), nonprofits with recurring revenues from government are perceived to be more financially stable, and hence they are more likely to borrow. In addition, there is evidence that government subsidies increase the use of debt by public authorities (Eger 2004). These two arguments may lead to an expectation of a positive

Figure 1
Revenue Structure and Leverage of a Nonprofit Organization



relationship between government subsidy and debt issuance of nonprofits. Nevertheless, Boris and Steuerle (1999) argue that, as governments reduce funding, the rivalry increases among nonprofits for remaining public or private funds. This competition may encourage nonprofits to search for new sources of revenue to meet their financial needs and make tax-exempt bonds an attractive option. Thus debt might also be considered a substitute for declining governmental support.

4. Conceptual Framework

Figure 1 illustrates the relationships among revenue diversification, financial risk, and debt leverage in a dynamic way. The four revenue components (donations, government subsidy, program revenue, and investment income) and their relative proportions make the unique revenue structure of each nonprofit organization. When the internal revenue components interact with the

external macro-environment, such as trends in the business cycle, it causes the fluctuation of revenue streams, which is financial risk. Because revenue volatility or financial risk may impose a constraint on the debt capacity, it may potentially influence the leverage of individual organizations (Berger and Ofek 1995).

Most previous research emphasizes the impact of financial risk on the nonprofit capital structure, which is internally determined by revenue structure and externally subject to the influence from the economic environment. Moreover, financial risk is a less controllable factor in nonprofit financial management than revenue diversification. Therefore, in this paper, nonprofit capital structure is explored from the perspective of the revenue structure, which can be effectively managed by the board of a nonprofit firm. By diversifying the revenue structure with multiple revenue streams that are not perfectly correlated, a nonprofit organization is supposed to be able to reduce the financial risk and thereby enhance the potential for leverage. This study specifically explores the direct relationship between revenue structure and nonprofit leverage.

Doing so requires a measure of revenue diversification. A common way to measure revenue diversification is the Hirschman-Herfindahl Index (HHI),¹ which has been widely used in the field of industrial organization concentration research. The degree of diversification in terms of this measure depends on both the numbers of revenue sources and the proportion of each revenue type (Chang and Tuckman 1994). Inspired by the existing literature on tax revenue diversification, this study uses a revised measure of HHI developed by Suyderhoud (1994), which incorporates four types of nonprofit revenue sources to define revenue diversification. The four types of revenue include: government grants²; donations (direct and indirect public support and net special event revenue); program revenue (program service revenue, dues and assessments, profits from sale of inventory, and other revenue); and investment income (interest, dividends, net rental expenses, other investment income, and net gain or loss from sales of assets other than inventory). Thus, the degree of nonprofit revenue diversification in terms of the four revenue groups is measured by:

$$RD = \frac{1 - \sum_{i=1}^4 R_i^2}{0.75},$$

where R_i is the proportion of nonprofit revenue generated by each of the four revenue sources. This index implies that the higher the values of RD, the greater the levels of revenue diversification among nonprofit revenue

structures. One obvious advantage of this revised measure over the original HHI is that, rather than an absolute measure of concentration level, it considers the relative position of a nonprofit's revenue structure to its maximal diversification scenario.³

5. Data and Model Specification

5.1. Data

This analysis uses the IRS Statistics of Income (SOI) microdata from 2000 to 2003, which are taken from Form 990 nonprofit tax filings.⁴ Because nonprofit organizations exhibit great variations by nature or by revenue sources, it is less valuable and feasible to make a generalization to the entire sector. A national subsample of 501c (3) type arts, culture, and humanities nonprofit organizations is used as the subject of the analysis.⁵ The reason for choosing arts, culture, and humanities nonprofits is that this particular subsector has shown the largest intra-category variation in the revenue structure (Chang and Tuckman 1994), which provides a good context for our study.

The data required some cleaning before it was suitable for analysis. The data set started with 4,468 observations. Five hundred and ninety-three observations that had missing values or negative values for revenue share variables were dropped.⁶ The resulting sample contained 3,875 observations for 1,397 unique employer identification numbers. Further examination revealed that thirty-five of the observations from ten organizations had extremely high leverage ratios of more than 1.25, indicating more than \$1.25 in liabilities for every dollar in assets. These observations indicate a potential "going-concern" problem for those firms; in fact several of these organizations have already filed for bankruptcy. The ten firms with leverage values greater than 1.25 were dropped from the sample, leaving 3,840 observations for 1,387 organizations.

5.2. Model Specification

A model to capture the factors that determine the leverage of nonprofit organizations requires two stages because only 44 percent of the organizations have debt. However, 86 percent of the organizations either maintain positive leverage or no leverage across all observed periods. A panel selection correction is not feasible or accurate in describing arts organizations. Technically, perfect classification would occur, but it is more descriptive to

say that most organizations decide whether to have leverage, or not, and then continue that behavior over a period of years. We estimate a cross section Heckman correction, which is then applied to the panel of leverage for the organizations that have positive leverage.

The arts organizations in sample were first identified as debt issuing or non-debt issuing entities. Any organization that held long-term debt during the four-year period was classified as *debt issuing*. A probit model is then used in the first stage to estimate the probability that an arts organization will issue debt. A Heckman selection model is then employed in the second stage to control for selection bias. The independent variables used in the probit model were extended from Denison (2005) by examining the proportion of revenue from different sources and the degree of revenue diversification. The second stage model assumes that nonprofit leverage is a function of the Diversification Index, as well as other variables that include a firm's total revenue, the size of the nonprofit, the value of equipment and other fixed assets, the revenue proportion from contribution, the revenue proportion from government, the revenue proportion from program, a measure of agency cost, and the firm's financial position (surplus or deficit).

The model contributes especially to prior research by incorporating a measure of revenue diversification and the proportion of revenue from contributions, government grants and program services, and a measure of a nonprofit's financial position, among other variables.⁷

Leverage (LEVERAGE) is used as the dependent variable, which is measured by the sum of long-term financial debt, including tax-exempt bonds and mortgages, and other notes payable, divided by total assets. The study only looks at the debt that is long term in nature because it is used to finance capital assets that are important for the sustainability and long-term development of a nonprofit organization. While other short-term liabilities are often held by nonprofits, they are mainly used to cover temporary cash shortfalls or other operational expenditures.

The explanatory variables are based on the conceptual framework presented in the preceding section. One variable of interest in this analysis is the revenue diversification index (DI). Because a higher index indicates a more diversified revenue structure, which is expected to lower the financial risk of an organization and increase the debt capacity, a positive sign is expected between the DI and leverage. It is also important to include in the model variables of revenue proportion from government grants, public support, and program activities to ascertain the marginal impact of increasing or decreasing the use of a particular source of revenue.

A second point of interest is the extent to which a nonprofit organization relies on government subsidy. This is measured by the proportion of total revenue from government grants (PCTGOV) and expressed in a percentage term. Often government funding for arts is renewable, and therefore may be more stable and secure than other revenue sources, which may in turn reduce the revenue volatility and lead to higher leverage, so the expected sign of this variable is positive.

The proportion of program revenue (PCTGO_SERV), such as selling goods and services, is gaining more weight as an alternative to traditional sources of nonprofit support over the past decade. Also, this type of revenue exhibits moderate level of revenue volatility (Froelich 1999), so program revenue is expected to have a positive correlation with leverage. As previously discussed, some donors expect nonprofit boards to be more risk averse regarding debt issuance than corporate counterparts (Fama and Jensen 1983). Therefore, the percent of revenue from public support (PCTPUB) should be negatively related to the leverage (Bowman 2002). The financial position of a nonprofit is indicated by the percentage of surplus or deficit relative to its total revenue (PCTSURPLUS). Because operating surplus can be a proxy of retained earnings, it has different implications in terms of trade-off versus pecking order theory. Trade-off theory predicts a positive relationship between leverage and return, while pecking-order theory proposes a negative coefficient. Hence the net effect of this variable is ambiguous.

Agency costs arise when the organization management acts in conflict with the best interests of the board of directors.⁸ Agency cost is measured by the percentage of total expenses that are spent on the executive compensation and other salaries and wages (PCTCOMP). Wedig et al. (1996) presume that both agency problem and the default risk may lead to upward sloping cost of debt in nonprofits, which indicates that both agency costs and risk of default should have a negative relationship with debt issuance. An alternative interpretation of executive compensation is that higher paid executives have more professional training and have a better understanding the prudent uses of debt. Jegers and Verschueren (2004) argue that organizations are more likely to use debt financing if they provide higher employee compensation.

The size of organization is captured by the log of total assets in constant 2000 dollars (LNASSET) at the end of the year. All else equal, a larger organization is assumed to have a higher leverage than smaller ones because "large firms may have better access to capital markets than small firms" (Bacon 1992), so a positive sign is expected here. Long-term debt is used to

Table 1
Descriptive Statistics of Variables

Variable	Definition	Standard			
		Mean	Deviation	Minimum	Maximum
LEVERAGE	Ratio of financial debt to total assets	0.061	0.137	0.000	0.992
DEBT_YES	Equals one if an organization issues financial debt	0.441	0.497	0.000	1.000
DI	Revenue diversification index	0.502	0.275	0.000	0.974
PCTGOV	Percent revenue from government grants	0.097	0.185	0.000	1.000
PCTPUB	Percent revenue from public support	0.440	0.295	0.000	1.000
PCTGO_SERV	Percent revenue from goods and services	0.328	0.303	0.000	1.000
LNASSET	Log of total assets	15.193	2.768	5.389	21.001
LNREV	Log of total revenue	14.145	2.244	5.812	20.014
PCTSURPLUS	Percent surplus relative to total revenue	-0.026	2.277	-52.075	7.169
PCTFIX	Ratio of fix assets to total assets	0.277	0.294	0.000	0.999
PCTCOMP	Percent compensation relative to total expenses	0.273	0.196	0.000	2.498

Note: There are 3,840 observations for 1,387 501c(3) organizations during the years 2000-2003.

finance capital (fixed) assets, such as facilities and equipment. The ratio of fixed assets to total assets (PCTFIX) indicates the nonprofit organization's stock of facilities and equipment and is expected to be positively correlated with debt leverage. Also, the log of total revenue in constant 2000 dollars (LNREV) is used to indicate the growth in financial strength of an individual organization. An increase in total revenue may bring about a higher leverage in the short run, but may decrease leverage in the long run, as some public finance literature suggests (Clingermyer and Wood 1995). Therefore the direction of this variable needs to be explored.

The descriptive statistics for each of the variables in the analysis and Pearson correlation matrix are listed in table 1 and table 2. From the summary statistics in table 1, we note that public support generates the largest revenue share. Also, the negative percent surplus indicates that the overall arts, culture, and humanities nonprofit organizations are operating at a minor deficit.

Table 2
Pearson Correlation Matrix

	LEVERAGE	DEBT_YES	DI	PCTGOV	PCTPUB	PCTGO_SERV	LNASSET	LNREV	PCTSURPLUS	PCTFIX	PCTCOMP
LEVERAGE	1.0000	—	—	—	—	—	—	—	—	—	—
DEBT_YES	0.5040	1.0000	—	—	—	—	—	—	—	—	—
DI	0.0975	0.3319	1.0000	—	—	—	—	—	—	—	—
PCTGOV	0.0610	0.0729	0.1684	1.0000	—	—	—	—	—	—	—
PCTPUB	0.0381	0.1065	-0.0133	-0.2295	1.0000	—	—	—	—	—	—
PCTGO_SERV	0.0187	-0.0234	-0.0449	-0.2496	-0.6123	1.0000	—	—	—	—	—
LNASSET	0.1795	0.3904	0.3676	0.0362	0.1391	-0.3374	1.0000	—	—	—	—
LNREV	0.1901	0.4161	0.3361	0.1019	0.1576	-0.2076	0.8848	1.0000	—	—	—
PCTSURPLUS	0.0224	0.0373	0.0646	0.0364	0.1055	0.0419	-0.0191	0.0338	1.0000	—	—
PCTFIX	0.2709	0.3264	0.2153	0.1570	0.0512	0.0376	0.1912	0.1383	0.0580	1.0000	—
PCTCOMP	0.0686	0.2674	0.4024	0.1731	0.0539	0.0014	0.2853	0.3789	0.0659	0.1683	1.0000

Note: There are 3,840 observations for 1,387 arts organizations during the years 2000-2003.

Table 3
Heckman selection model—Two-step Estimates

	Coefficient	Standard Error	z	P > z
LEVERAGE				
DI	0.117	0.138	0.850	0.397
PCTGOV	0.602	0.256	2.350	0.019
PCTPUB	0.586	0.274	2.140	0.032
PCTGO_SERV	0.654	0.274	2.390	0.017
LNASSET	0.063	0.029	2.200	0.027
LNREV	-0.016	0.016	-0.980	0.325
PCTSURPLUS	0.016	0.020	0.800	0.421
PCTFIX	0.089	0.034	2.640	0.008
_Cons	-1.557	0.807	-1.930	0.054
DEBT_YES				
DI	1.152	0.170	6.770	<0.001*
PCTGOV	1.994	0.320	6.220	<0.001*
PCTPUB	2.197	0.286	7.670	<0.001*
PCTGO_SERV	2.209	0.295	7.490	<0.001*
LNASSET	0.228	0.040	5.690	<0.001*
PCTCOMP	0.313	0.219	1.430	0.152
LNREV	-0.003	0.045	-0.060	0.951
_Cons	-6.235	0.398	-15.670	<0.001*
mills				
lambda	0.344	0.163	2.120	0.034
rho	1.000	—	—	—
sigma	0.344	—	—	—
lambda	0.344	0.163	—	—
Number of observations = 1387				
Censored observations = 776				
Uncensored observations = 611				
Wald chi2(14) = 277.04				
Prob < chi2 = 0.0000				

Note: *Value is less than 0.0005.

6. Research Findings

Table 3 presents the Heckman selection model estimation results for the model of having leverage over some or all of the years 2000-2003. As noted above, few organizations change leverage classification. The overall model is statistically significant, as identified by the chi-squared test. The probit model in the lower panel of Table 3 shows that the proportion of revenues

from government, public donations, and service fees are important factors that increase the probability that an arts organization will issue debt. Furthermore, the diversification of revenue sources is also an important factor in the decision to issue debt.

The regression model in the second stage is shown in the first panel of Table 3. In contrast to the first stage, revenue diversification is not statistically significant in determining the value of the leverage ratio (how much debt is actually issued relative to total assets). The proportion of revenues from government, public donations, and service fees remain important predictors of the leverage. Consistent with expectations, percent revenue from program service fees (PCTGO_SERV) and government revenues (PCTGOV) are all positively related to leverage and significant at the 0.05 level, indicating that increases in these revenue sources lead to higher leverage ratios. Contrary to prediction, percent revenue from public support (PCTPUB) shows a positive effect on the leverage with significance at 0.01 level, which also contradicts the finding from Bowman (2002). It appears that public support increases the likelihood that an arts organization issues debt, and also increases the leverage ratio of an arts organization that has opted to issue debt.

In addition, the level of assets and the fixed asset ratio are also predictors of leverage. The effect of log of total revenues (LNREV) and percent surplus (PCTSURPLUS) is not supported.

The inverse Mills ratio coefficient is positive and statistically significant, which suggests that organizations that are more likely for unobserved reasons to take on leverage are also for the same unobserved reasons more likely to take on more leverage. If other nonprofits were thus compelled to take on leverage, they would be predicted to take on less than the observed average.

7. Conclusions

This study raised two important hypotheses regarding the impact of diversified revenue structure and government support on the long-term liabilities of nonprofit organizations. To test these hypotheses, a Heckman selection model is estimated. The model examines a set of factors that may explain the various leverage ratios of nonprofit organizations, and tests it with a national sample of arts, culture, and humanities nonprofit organizations. The first stage probit estimation provides strong support that revenue diversification is an important factor in the decision of an arts

organization to issue long-term debt. Government support is a positive influence on both an arts organization decision to issue debt and also the level of debt.

By investigating this nonprofit borrowing model, we gain valuable insights about the different roles that revenue diversification and other financial factors play in the leverage decision process. The most important lesson here is that the diversified revenue structure may not only contribute to a nonprofit organization's own financial capacity, but also may have a noticeable impact on its capital structure. Organizations with more diverse revenue options seem better suited to issue debt. Such insights can serve as guidance for the board of nonprofit organizations in stabilizing revenues and considering debt finance options. The impact of government funding and debt is consistent with the bailout hypothesis raised by Eger (2004)—that the increased government funding enables public authorities to incur higher levels of debt as a result of moral hazard behavior. Nevertheless, the bailout hypothesis may not be entirely applicable to nonprofit organizations. The similar finding here could be explained by the revenue stabilization effect of governmental funds. Put another way, the increased reliance on government support can bring in additional revenue stability, and thus greater debt capacity to nonprofit organizations. Enhanced debt capacity enables organizations to expand or grow through borrowing. The empirical evidence suggests that, on average, for arts organizations, a one unit increase in government support increases leverage by 0.6 units. The finding warrants further investigation because it holds great implications for government-nonprofit relations.

As a limitation, the IRS microdata used in this study include all large organizations with assets over \$50 million and a random sample of smaller organizations, which makes the results more heavily weighted toward very large organizations. Controlling for size makes sampling weights unnecessary, but the sample could be larger with greater representation of small organizations. In addition, this research tests the revenue diversification and government support arguments only within a subgroup of nonprofit organizations. As a future improvement, similar hypotheses could be tested with a larger dataset with broader representation and coverage of nonprofit subsectors. Finally, the causal relation between revenue structure and nonprofit leverage is examined here without directly considering the intervening factor of revenue volatility. It will be interesting for future research to explore in more detail how revenue diversification influences revenue volatility and how revenue volatility impacts leverage.

Notes

1. HHI is calculated by summing the squares of each revenue share (Suyderhoud 1994).
2. The direct government support comes in two forms: cash grants and service contracts. Because contract revenue is usually categorized as program revenue (Froelich 1999), here government supports only refers to cash grants.
3. This equation can be expressed in an alternative way as $RD = (1 - \sum Ri^2) / (1 - \sum Ri^{*2})$, where $Ri^* = 0.25$ when the organization achieve the maximum diversification.
4. All nonprofit organizations with gross receipts of more than \$25,000, except religious groups, are required to file the 990 form with the IRS
5. This sample contains 100 percent of large organizations, but as low as 1 percent for small organizations, and the sample is random within each stratum.
6. Among the 593 dropped observations, 89 observations have missing values and 61 observations contain negative values for revenue from public support, goods, and services, which are assumed to be reporting errors. Froelich, Knoepfle, and Pollak (2000) elaborate on the reporting errors in the 990 data. The remaining 443 observations were dropped because they contain negative values for investment revenue, which contradicts the assumptions of the HHI calculations.
7. Each of the three revenue types are defined the same way as those in the revenue diversification index.
8. Another example of nonprofit financial behavior from the agency perspective is provided by Krishnan, Yetman, and Yetman (2006), who present evidence that nonprofit organizations use cost accounting to misrepresent fundraising expenses. They report that the accuracy of the allocated fundraising expenses is improved when an external auditor is procured.

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