

Running on Empty: The Operating Reserves of US Nonprofit Organizations

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Executive Summary

This paper analyzes why nonprofits' operating reserves vary, and which factors are associated with organizations that actually maintain operating reserves. These operating reserves allow an organization to smooth out imbalances between revenues and expenses, helping to maintain program output in the presence of fiscal shocks. Despite the importance of reserves, nonprofits frequently report living on shoestring budgets, where resource inflows and outflows are tightly matched and small interruptions can have dire consequences in the absence of operating reserves. A study of Washington, DC nonprofits found that nearly 60 percent of charities had operating reserves of less than three months of expenses, and nearly 30 percent had no operating reserves at all (Blackwood and Pollak 2009). The Nonprofit Finance Fund (NFF) also found that over 60 percent of nonprofits surveyed maintained less than three months of expenses in reserve, while only 19 percent reported more than 6 months of expenses (NFF 2010). These deficiencies should not be interpreted as a new phenomenon triggered by the economic turmoil that began in 2008; Smith and Lipsky (1993, 154) document that nonprofits are essentially

prohibited from building up or maintaining reserves, and that public agencies that contract with nonprofits in particular look negatively on such reserves.

The primary reason nonprofits build operating reserves is to mitigate the effects of business cycles on revenues and expenses. Nonprofits can address mismatches between revenue and expenses in one or more of four ways: 1) reducing spending; 2) increasing revenues; 3) using temporary sources of resources to balance temporary shortfalls (for example, borrowing, asset sales, or other one shots); or 4) using reserves accumulated by the organization. Defining operating reserves in the nonprofit sector is not as straightforward as it may seem at first. Donor-imposed restrictions may limit resources available to draw upon. A sensible target for a nonprofit's operating reserves might be the average gap between revenues and expenses. However, organizations with more volatile revenue or spending are likely to experience larger gaps, requiring increased operating reserves to protect the organization's output. Therefore, a nonprofit's target operating reserve should change as a result of factors related to revenue or expense volatility. In addition, nonprofits with similar revenue and expense volatility

might select different reserve levels (including holding no reserves at all) if managers assess the costs of running an operating deficit (that is, the difference between revenues and expenses) or the costs of accumulating reserves differently. The costs associated with deficits might include additional staff time devoted to handling creditors during shortfalls, additional staff time focused on speeding up payments owed to the nonprofit organization from donors or clients, banking fees associated with borrowings, late fees associated with delinquent payments, or the costs associated with transferring money between financial accounts, among other transaction costs. The costs of accumulating reserves might include lower earnings (due to the short-term nature of the investing), or fewer clients served, among other opportunity costs.

Hypotheses are developed and tested on a sample of organizations identified for the 1998 - 2003 period using data obtained from the National Center on Charitable Statistics (NCCS)-GuideStar National Nonprofit Research Database. Findings suggest that operating reserves are reduced in the presence of concentrated public funds, access to debt, fixed assets, and endowment. However, size is not an important predictor, indicating

that the lack of reserves is not limited to small nonprofit organizations, but is instead a sector-wide issue. Further, significant numbers of nonprofits maintain no operating reserves at all. One potential explanation for the lack of reserves held is that organizations discount the benefits of reserves because they are evaluated on spending, focusing instead on “the benefits of costs.” This preference for spending over reserving may also help explain the general lack of liquidity in the sector beyond operating reserves alone.

Introduction

This paper analyzes why nonprofits' operating reserves vary, and which factors are associated with organizations that actually maintain operating reserves. These operating reserves allow an organization to smooth out imbalances between revenues and expenses, helping to maintain program output in the presence of fiscal shocks. Despite the importance of reserves, nonprofits frequently report living on shoestring budgets, where resource inflows and outflows are tightly matched and small interruptions can have dire consequences in the absence of operating reserves. A study of Washington, DC nonprofits found that nearly 60 percent of charities had operating reserves of less than three months of expenses, and nearly 30 percent had no operating reserves at all (Blackwood and Pollak 2009). The Nonprofit Finance Fund (NFF) also found that over 60 percent of nonprofits surveyed maintained less than three months of expenses in reserve, while only 19 percent reported more than 6 months of expenses (NFF 2010). These deficiencies should not be interpreted as a new phenomenon triggered by the economic turmoil that began in 2008; Smith and Lipsky (1993, 154) document that nonprofits are essentially prohibited from building up or maintaining reserves, and that public agencies that contract with nonprofits in particular look negatively on such reserves.

Despite the importance of operating reserves to nonprofit management and the history of sector-wide concerns with the topic, the academic literature has not focused significantly on the topic. We know surprisingly little about why nonprofits might accumulate operating reserves, and what factors explain variation between organizations' savings behavior. No article has focused specifically on nonprofit operating reserves, and very few have even focused on related topics.¹

The empirical results indicate that having access to debt, increased concentrations of public funds, increased concentrations of fixed assets, and larger endowments reduce operating reserves. Importantly, public funds have a consistent and significant negative association with operating reserves. However, operating reserves are not influenced by donation concentration, suggesting that donors may understand the importance of maintaining operating reserves for program continuity. Further, nonprofits that maintain positive operating results build up reserves to ensure fixed costs are paid despite fiscal shocks. The analysis also finds that a significant portion of the sample has no operating reserves at all. Rather than reserving money to reduce financial vulnerability, nonprofits may be spending to ensure their program expense ratios (that is, that ratio of program spending to total expenses) are at a sufficiently high level. In this understanding, the opportunity cost of holding reserves is extremely high, and this leads to operating reserves being ignored as a primary goal of the organization in favor of the "benefits of costs." This preference for spending over reserving of resources may also help explain the general lack of liquidity in the sector.

¹ Core and others (2006) and Ramirez (2010) analyze nonprofit cash balances. The difference between cash and reserves for nonprofits is explained in the next section.

This paper contributes to the literature in several ways. First, expectations about why nonprofits may or may not choose to hold reserves are articulated; these incorporate unique features of nonprofit finance. These expectations are then empirically tested on a national sample of nonprofit organizations that is more representative of the sector than prior analyses of related topics. Second, this paper documents the lack of operating reserves in the sector. The data indicate that the median nonprofits holds only about one month of operating expenses in reserve, and nearly 40 percent of the sample has no operating reserves at all. Finally, the paper provides recommendations for managers and board members seeking to influence their organizations' reserve levels.

Modeling Operating Reserve Behavior of Nonprofit Organizations

The primary reason nonprofits build operating reserves is to mitigate the effects of business cycles on revenues and expenses. Nonprofits can address mismatches between revenue and expenses in one or more of four ways: 1) reducing spending; 2) increasing revenues; 3) using temporary sources of resources to balance temporary shortfalls (for example, borrowing, asset sales, or other one shots); or 4) using reserves accumulated by the organization.²

Reductions in spending or increases in revenues may be difficult when fiscal shocks occur. After all, a decline in economic activity may result in increased demand for certain nonprofit services at the same time that certain revenue sources are shrinking. For example, a national recession might lead to increased demand for services provided by nonprofits precisely at the moment donations from individuals are declining.³ Even commercial nonprofits may be unable to increase prices quickly to handle such shortfalls. For example, hospitals have contracts with insurers that must be negotiated, schools have tuition and charges that only can be increased periodically, social service providers may have public contracts that do not permit increased reimbursement at all, as several examples. Further, certain one shots may be difficult for nonprofits to pursue. For example, Bowman (2007a) notes that many nonprofits own "privileged assets" that they cannot sell;⁴ further, these options may not be readily or quickly available to aid nonprofits coping with fiscal stress. Therefore, because these other three options may be unavailable, using accumulated operating reserves may be the best management strategy for dealing with gaps between revenues and expenses. Researchers have used reductions in program spending to define financially vulnerable nonprofits (see,

² These four responses to fiscal shocks are adapted from Poterba's (1994) study of how U.S. states cope with fiscal crises.

³ This is simply meant to be a generalization. A 2008 Giving USA report shows that different types of nonprofits experience different changes in giving during recessions. For example, human service nonprofits have seen increases during some recessions, while health, education, foundations, and the arts generally show declines. However, giving in 2008 and 2009 decreased sharply following the economic recession that began in 2008.

⁴ For example, Bowman (2007) describes church buildings, museum structures, and historic university properties as fixed assets that nonprofits may not dispose of despite their potential for weakening an organization's finances.

for example, Greenlee and Trussel 2000, and Keating and others 2005); as such, an organization's operating reserves are an important indicator of financial health.

Defining operating reserves in the nonprofit sector is not as straightforward as it may seem at first. Operating reserves are certainly related to an organization's cash and other liquid short-term resources, but several distinctions are crucial. Most basically, operating reserves are distinct from other assets owned by a nonprofit that may come with donor-imposed restrictions on their usage (Blackwood and Pollak 2009). Any donor can restrict how a nonprofit may use a contribution. Cash that is restricted cannot be used for transactional purposes, and a nonprofit with such cash in a bank account may be unable to use it as needed.⁵ A nonprofit may be able to convert other assets (such as inventories or receivables) into cash if necessary, but these other assets must also be unrestricted. As noted by Ramirez (2011), endowments - because they are invested primarily in stocks and bonds that fluctuate in price - have an unknown value in the short-term; as such, using endowments to cover shortfalls may not be a preferred (or even possible) management strategy to maintain programmatic output when shortfalls happen - especially if the shortfall coincides with a decline in financial markets. Operating reserves, therefore, are liquid and unrestricted assets (Moyers 2011).

Given this, a sensible target for a nonprofit's operating reserves might be the average gap between revenues and expenses. However, organizations with more volatile revenue or spending are likely to experience larger gaps, requiring increased operating reserves to protect the organization's output. Therefore, a nonprofit's target operating reserve should change as a result of factors related to revenue or expense volatility. In addition, nonprofits with similar revenue and expense volatility might select different reserve levels (including holding no reserves at all) if managers assess the costs of running an operating deficit (that is, the difference between revenues and expenses) or the costs of accumulating reserves differently. The costs associated with deficits might include additional staff time devoted to handling creditors during shortfalls, additional staff time focused on speeding up payments owed to the nonprofit organization from donors or clients, banking fees associated with borrowings, late fees associated with delinquent payments, or the costs associated with transferring money between financial accounts, among other transaction costs. The costs of accumulating reserves might include lower earnings (due to the short-term nature of the investing), or fewer clients served, among other opportunity costs.

Overall, operating reserves are likely to vary because of differing organizational characteristics that are associated with resource volatility, but also because of differing organizational assessments of the opportunity and transaction costs associated with operating reserves and deficits. These differences are used to develop testable hypothesis related to nonprofit operating reserve levels.

⁵ See Miller (2003) and Miller (2005) for specific examples of this phenomenon.

Testable Hypotheses

Chang and Tuckman (1991), Greenlee and Trussel (2000), and Yan and others (2009) note that revenue diversification is a risk-reducing strategy used in the nonprofit sector; Carroll and Stater (2009) find that such diversification reduces revenue volatility and stabilizes the ability of nonprofits to deliver services. Nonprofits with diverse revenues may need fewer reserves because of increased certainty that revenue targets will be met. Nonprofits with increased proportions of fixed costs (that is, those costs that do not change with output, such as interest, rent, and others) may have expenses that make unexpected fluctuations less likely; however, these expenses also cannot be shed because of lower output. Increased proportions of fixed costs may lead to higher operating reserves to ensure that these fixed costs can be met regardless of whether or not output reaches expectations. For purposes of this study, revenues are classified into four distinct sources: donations, government grants, program revenue, and investment income.⁶ Revenue diversification is then measured as in Yan and others (2009) using:

$$RD = \frac{\sum_{i=1}^4 R_i^2}{0.75} \quad (1)$$

where R_i is the ratio of revenue generated by each revenue source. An increasing value in the diversification index indicates greater revenue diversity (with implied increased revenue stability) of the organization. Fixed costs are defined as the proportion of occupancy, interest, and depreciation expenses to total expenses.

H1: Nonprofits with increased revenue diversification will hold fewer operating reserves, while nonprofits with increased proportions of fixed costs will hold higher operating reserves.

Some nonprofits generate a significant amount of their operating funding from governments through grants and service contracts (Salamon 1987; Lipsky and Smith 1989). Gronjberg (1991) finds that nonprofits with greater dependence on government funding have greater revenue predictability, suggesting that the benefits of reserves to these organizations are lower. Handy and Webb (2003) note that government funders may view these reserves as indicative of a lack of need by the nonprofit for funding, and that nonprofits

⁶ Donations include direct and indirect contributions from individuals (lines 1a and 1b), as well as net special events revenue (line 9c); government grants (line 1c) and earned income from contracts (line 93g) divided by total revenues; program revenue include dues and assessments (line 3), profits or losses (net) from inventory sales (line 10c), program service revenue (line 2), and other revenue (line 11); and investment income is comprised of interest (line 4), dividends (line 5), net rental expenses (line 6c), gains or losses from sales of assets other than inventory (net) (line 8d), and any other investment income (line 7). Total revenues are manually summed from these individual revenues.

in general may reduce reserves in anticipation of public funding during hard economic times. For nonprofits dependent upon public funding of services, both cases indicate that the opportunity costs of holding reserves (less services and possible loss of funding) are greater than the benefits of hedging against revenue uncertainty.

An extension to this volatility argument is that public funds come with significant transaction costs that reduce potential reserves. For example, Kramer (1994) describes cash flow delays, reporting and accountability requirements, annual resubmission for continued funding, conflicting requirements and deadlines between various funders, among others; Bernstein (1991) further describes constant external monitoring that disrupts staff routines, significant audit costs, frequently changing rules, the need to establish managements systems simply to deal with reporting requirements, among others. A recent study by Boris and others (2010) finds similar costs still exist with government contracts and grants. Therefore, while less volatile, public funding may come with increased costs as a price for this revenue stability. For this study, the proportion of public funds should capture all funds originating from governments and includes government grants⁷ and earned income from contracts⁸ divided by total revenues.

H2: Nonprofits more reliant on public funds are more likely to hold less operating reserves.

A nonprofit may also deal with imbalances in inflow and outflows not by employing operating reserves, but instead by borrowing. Such borrowing can effectively smooth out this imbalance by allowing the nonprofit to match outflows when inflows fall short, and then paying back the loan when inflows exceed outflows. In this case the organization may view the cost of borrowing (interest) as lower than the cost of reducing services in response to a fiscal shock. Nonprofits can access the taxable and tax-exempt credit markets by assuming bonds, mortgages, notes, or lines of credit. Access to outside funds is defined using a dichotomous variable in which “1” indicates that the nonprofit has financial debt (bonds, mortgages, or notes) outstanding, and is identical to a measure of access to debt used in Fisman and Hubbard (2005) and Core and others (2006).⁹

H3: Nonprofits with access to borrowing will hold less in reserves than nonprofits with no such access.

⁷ From line 1c of the Form 990.

⁸ From Part VII (“Analysis of Income-Producing Activities”) of the Form 990. Specifically, line 93g provides data on “fees and contracts from government agencies.” Medicare and Medicaid payments are not included in the calculation of public funds since the validity of the data is questioned by the NCCS.

⁹ An ideal variable would measure whether or not a nonprofit organization has an available untapped line of credit on which to draw if necessary. Such data are not available from the Form 990. Another definition might look at the ratio of financial debt (mortgages and bonds) to total assets as a measure of indebtedness. Using this alternate definition does not change the empirical results; the coefficient is consistently significant and negative.

Donors may not want to contribute to nonprofits with too much accumulated wealth, preferring that donations be expended currently rather than saved for a subsequent fiscal year (Marudas 2004). The cost of holding reserves for nonprofits dependent upon donative revenue might be reduced future revenues, suggesting that these organizations will hold lower reserves to continue to attract current and future donations. The proportion of revenues derived from donations is defined as direct and indirect contributions from individuals (lines 1a and 1b) plus net special events revenue (line 9c) divided by total revenue.

H4: Nonprofits more reliant on donation revenue will hold lower operating reserves compared to those nonprofits more reliant upon nondonative revenue.

Nonprofits that own property may believe that saving operating reserves are less essential than current spending because these fixed assets can serve as collateral for borrowing. Denison (2009) finds that nonprofits with higher concentrations of fixed assets have increased leverage ratios compared to less capital-intensive organizations, and suggests that these fixed assets mitigate financial distress costs of the organization (because these assets are more likely to maintain their value through bankruptcy, which in turn reduces the nonprofit's borrowing costs). A variable measuring the proportion of a nonprofit's fixed assets (property, plant, and equipment) to total assets is used.

H5: Nonprofits with increased concentrations of fixed assets are more likely to have lower operating reserves than nonprofits with less fixed asset concentrations.

Nonprofits may also own endowments, which are intended to produce income for the organization even if no services are provided (that is, endowments produce fixed revenues that are independent of output). The relative certainty of the income generated from true endowment (Helms and others 2005) may reduce the need for operating reserves. A nonprofit's endowment is measured as the ratio of permanently restricted net assets to total assets.

H6: Endowments are predicted to have a negative effect on operating reserves because they generate relatively certain income for nonprofits.

Larger organizations can achieve economies of scale in managing liquid available assets (Opler and others 1999), and are likely to hold less operating reserves as a result. Put another way, the transactional costs of managing assets is not expected to increase linearly as size increases; as a result, larger organizations can hold fewer reserve. With fewer related costs, resources can be spent rather than reserved. Organizational size is measured using the

natural logarithm of total assets, as in Bowman (2002), Denison (2009), and Yan and others (2009).

H7: Larger nonprofits are predicted to have smaller operating reserves than smaller nonprofits, all else equal.

Data

To test the articulated hypotheses regarding the determinants of nonprofit operating reserves, a sample of organizations is identified for the 1998 - 2003 period using data obtained from the National Center on Charitable Statistics (NCCS)-GuideStar National Nonprofit Research Database. This database covers all public charities required to file the Form 990, a standardized annual tax filing required by the Internal Revenue Service (IRS). Religious organizations, private foundations, and public charities with gross receipts less than \$25,000 do not file the Form 990 and are not included in the data. The database is verified by NCCS, thereby increasing the quality of the reported data. Importantly, only the NCCS-GuideStar data contain information on the true endowments of individual nonprofit organizations, the basis of accounting used in reporting, as well as the government contracts managed by each individual organization.

<Insert Table 1, about here>

Table 1 summarizes the sample selection and data cleaning process. The initial sample of 1,388,480 observations covering 338,863 individual nonprofit organizations was reduced to 520,349 observations covering 125,434 organizations. The majority of eliminated observations did not have needed data on restricted net assets (591,172 observations, or more than sixty-eight percent of the eliminated observations), which (as described in the next section) is required for the construction of the dependent variable. The Form 990 gives organizations the option of reporting in compliance with Financial Accounting Standards Board (FASB) requirements that segregate net assets into unrestricted, temporarily restricted, and permanently restricted; 307,358 observations (or over 35 percent of the eliminated observations) report in a manner inconsistent with FASB standards and make it impossible to determine unrestricted net assets. Bowman and others (2011) note that these organizations should be eliminated from analyses whenever restrictions are important to the research project (as in the current analysis). Further, 283,814 observations (or nearly 33 percent of the eliminated observations) file using the Form 990EZ, which does not require the organization to segregate unrestricted from restricted net assets.

A significant amount of observations also do not report on the accrual basis of accounting - which is required by US Generally Accepted Accounting Principles (GAAP) - and are eliminated from the sample (219,251 observations, or twenty-five percent of the eliminated observations). Organizations not reporting on the accrual basis may not report all or any liabilities (which is

used as an independent variable) and noncash assets (which may be part of operating reserves). Without these assets and liabilities, net assets (whether restricted or not) are also not comparable with those reporting on the accrual basis. Bowman and others (2011) suggest dropping organizations not reporting using the accrual basis because of this lack of comparability. The remaining 57,708 observations (nearly seven percent of the eliminated observations) were eliminated over various data quality concerns. Because of the data cleaning required for the analysis, the results should be generalized only to those nonprofits filing the long Form 990 (not the 990 EZ), comply with FASB standards and GAAP, and have high quality reported public financial information.

Measuring Operating Reserves, and Descriptive Statistics

Operating reserves are defined as [Unrestricted Net Assets - Property, Plant, and Equipment, net of Long-Term Debt]/[Total Expenses-Depreciation].¹⁰ This definition, endorsed by the Urban Institute's Nonprofit Operating Reserves Initiative Workgroup in December 2008 and labeled "Reserves1," measures the total resources (cash and other liquid assets) readily available to draw upon by a nonprofit,¹¹ similar to Bowman's (2007b) notion of available financial capacity; importantly, it does not include restricted resources and capital assets.

The Workgroup also defined a more restrictive definition as [Unrestricted Net Assets - Property, Plant, and Equipment, net of Long-Term Debt - Receivables - Inventory - Prepaid Expenses]/[Total Expenses - Depreciation].¹² This definition ("Reserves2") excludes investments in non-liquid and non-current assets. Both definitions measure how long a nonprofit could cover approximate operating expenses with accumulated reserves. The paper uses Reserves1 as the primary dependent variable. Reserves2 is used to test the robustness of the findings, and the results are generally unchanged from those presented in Table 5.

Both definitions of operating reserves include all unrestricted assets not invested in physical capital stock. Some cash might be held for transactional purposes (such as working capital) and not as reserves. It is not possible to differentiate this cash from reserves. However, even such transactional cash can be used if necessary to cover budgetary shortfalls. Assuming that some of the unrestricted cash is better classified as working capital instead of reserves, then operating reserves are actually overstated slightly - suggesting the nonprofit sector is even more deprived of reserves than the current analysis finds.

All financial variables used are adjusted for inflation using the Consumer Price Index (CPI). Further, all continuous variables are winsorized at the one

¹⁰ The Form 990 lines of this definition are (line 67 (B) - line 55c (B) - line 57c (B) - line 64b (B))/line 17 - line 42(A).

¹¹ Available at <http://www.nccs2.org/wiki/images/3/3c/OperatingReservesWhitePaper2009.pdf>.

¹² The Form 990 lines of this definition are (line 67 (B) - line 55c (B) - line 57c (B) - line 64b (B) - line 47c (B) - line 48c (B) - line 49 (B) - line 50 (B) - line 51 (B) - line 52(B) - line 53 (B))/line 17 - line 42(A).

percent level to reduce the influence of outliers. Year dummies are included in all models. A summary of variable definitions and descriptive statistics are included in Table 2.

<Insert Table 2, about here>

Notably, the median operating reserves is quite small: reserves of 0.09 indicates that the nonprofit in the middle of the sample maintains reserves of approximately nine percent of annual total expenses that require cash, suggesting a reserve of approximately one month, still fairly small. Any disruption to cash flow - even small ones - is likely to affect program services (since vendors and employees cannot be paid). Such environments may also require increased daily focus on routine financial management issues, taking staff time away from program provision or strategic planning. Further, the daily stresses of managing liquidity in such an environment may lead to significant staff turnover for nonprofits, which in turn leads to increased costs. The mean for Reserves1 is negative, which might also imply that nonprofits are spending restricted money and using debt for operating (rather than capital) purposes. The more conservative definition (Reserve2) indicates that the average and median nonprofit organization in the sample has negative reserves as well. Overall, the average nonprofit does not appear to hold adequate reserves, and significantly less than a three-month minimum reserve recommended by many (see Blackwood and Pollack 2009).

<Insert Table 3, about here>

Table 3 presents the means and medians of the independent variables by reserve quartiles. The data in Table 3 suggest that the average reserve level for the average nonprofit is virtually nonexistent or negative (based on the means and medians for the bottom two quartiles, which represent one-half the nonprofits in the sample. Table 3 helps explain the persistent reports of liquidity constraints in the sector since most nonprofits seem to lack adequate reserves to draw upon. It helps explain why many nonprofits were forced to reduce services, layoff staff, and take other extraordinary measures when the financial crisis of 2008 unfolded - because average reserves were already low or nonexistent. Size does not monotonically change with reserve level, suggesting that the lack of these reserves is not limited to smaller organizations. In fact, larger nonprofits can be found at the top and bottom quartiles, with smaller nonprofits in between. A quadratic size variable is added to the regression to allow for this nonlinear relationship. Public funding also increases before decreasing. A quadratic was tested for this variable as well, but was not significant and did not affect the other variables with its inclusion. Hence, it is not included in the presented specifications.

<Insert Table 4, about here>

Table 4 also presents descriptive statistics, but separates observations between those with negative or no reserves (Column 1), those with positive reserve balances (Column 2), and those with positive reserve balances that are not in the top quartile for reserves (Column 3) - this column is best thought of as those observations with positive reserves but not extraordinarily large reserves. When the sample is restricted to nonprofits with positive reserves, this group actually reports a median ratio of 0.36 (more than four months of reserves), higher than the suggested NCCS 0.25 ratio. Excluding those nonprofits with reserves in the top quartile, the median nonprofit holds 0.17 (about two months) of reserves. Nonprofits with positive reserves have less access to debt, less fixed costs and fixed assets, and have higher proportions of revenues from donations than nonprofits without reserves.

The first t-test column tests whether the characteristics of nonprofit organizations with negative or no reserves differ statistically from those with positive balances. The results of this analysis suggests there do differ significantly at the one percent level. The final column of Table 4 tests whether the characteristics of nonprofit organizations with high (top quartile) relative reserves differ from those nonprofits that have positive reserve balances but are not in the top quartile (Column 3 of Table 4). The results in Table 4 suggest that nonprofits in the top quartile do differ significantly at the one percent level from other nonprofits with positive reserves. Both t-tests indicate possible groupings that are explored in the regression analysis.

Empirical Methodology, Results, and Discussion

This paper explores related research questions. Most basically, do operating reserves vary as predicted by the expectations articulated above? Secondly, which of these factors are associated with nonprofits that actually maintain operating reserves? This second question is addressed in two ways: first, by examining the subset of nonprofit organizations with positive operating reserves separate from those without such reserves; and second, by examining this subset of nonprofits again without those nonprofits in the top quartile.

Because the data are longitudinal, a fixed effects estimator is employed to address potential omitted variable bias and control for other unobserved but potentially important factors not captured by the independent variables. For example, a nonprofit's reserves may be affected by the financial sophistication of the board or managers, or by stated organizational goals related to fiscal reserves, or by the complexity of its government contracts. Further, a nonprofit's reserves may be affected by their state of residence, because tax-exempt debt is issued through state governments (either directly or through public authorities) and Attorney General oversight of nonprofit finances varies between states. In the absence of a fixed effects model, it is likely that an OLS estimator would yield inconsistent and biased estimates.¹³ The explanatory variables are lagged one year to mitigate potential endogeneity concerns.

¹³ A Hausman test confirms that organizational-level effects are correlated with the independent variables, suggesting that pooled cross-sectional results likely suffer from omitted variable bias. Because of this, the conservative fixed effects results are presented instead.

Robust standard errors clustered by nonprofit organization are used to address potential problems with autocorrelation and groups within the data; these errors are much more conservative than standard errors and reduces t statistics. Finally, dummy variables are included for each fiscal year to control for macroeconomic events that might also influence a nonprofit's operating reserves (for example, contraction or expansion of the national economy, either of which will affect an organization's finances).

The regression results for the full sample are presented in Column 1 of Table 5, and are generally in line with expectations (except for the fixed cost and the donations variables, which are not significant at the five percent or better level). One potential concern is a portion of reserves is only temporary because a nonprofit may have accumulated available resources to spend. For example, a nonprofit may have undergone a fundraising campaign, or sold an asset in order to purchase a different asset, or may have received a large reimbursement from a government or private funder for contract work, among other potential explanations. To allow for such transitory holdings, a variable that measures the change in the current year's reserves is added to the regression estimation, and is reported in Column 2. This variable measures the transitory portion of an organization's reserves, and is similar to Gore (2009). The fixed cost variable becomes significant but negative (contrary to expectations) following the inclusion of this transitory holdings control. The other variables, however, are generally unchanged from Column 1. The size variable and its quadratic indicate that operating reserves increase as size increases, and then declines, suggesting some economies of scale as hypothesized (because reserve accumulations do not increase linearly with size).

<Insert Table 5, about here>

The results in Column 3 of Table 5 address the second research question - related to which factors are important for those nonprofits actually maintaining reserves. This analysis excludes the 37 percent of the sample reporting negative operating reserves and the two percent with no reported operating reserves; recall, Table 4 finds a significant difference between these organizations and nonprofits maintaining reserves. In their analysis of Washington, DC nonprofits' reserves, Blackwood and Pollack (2009) find 19 percent of the area nonprofits report negative operating reserves; the national sample employed in the current analysis finds a much greater prevalence of negative reserves. Column 4 of Table 5 excludes the top quartile of those with positive reserves. When the sample is restricted to organizations with positive operating reserves (Column 3), the fixed cost variable becomes positive, which is consistent with expectations. The results are still positive and significant in Column 4 (excluding the top quartile), but more modest. The analysis consistently indicates that nonprofits with positive reserves accumulate them to ensure fixed costs can be paid.

The revenue diversification variable is negative and significant for those with positive reserves, but not when the sample excludes the top quartile (Column 4 of Table 5). The results suggest that for these nonprofits, revenue diversification has no association with reserves. This contrasts with the rest of the sample that reports the expected negative and significant coefficient for revenue diversification. Rather than reducing operating reserves due to the potential decrease in overall revenue volatility from diversification, nonprofits with positive reserves do not spend down any such reserves and seem instead to maintain reserves despite this apparent drop in revenue risk. Thus, these nonprofits (with positive reserves not in the top quartile) appear to be somewhat risk averse, because they do not reduce reserves despite increasing revenue diversity decreasing their organizational risks.

The proportion of donations is not significant. Donors, then, seem indifferent to nonprofit reserve levels. This is similar to the findings in Ramirez (2010) with respect to cash levels and contrary to Marudas (2004) with respect to wealth. When the top quartile is removed (Column 4), the proportion of donations variable is significant and negative. However, the coefficient suggests a very modest effect. These findings suggest that nonprofit concern about appearing unneedy to donors by accumulating some level of reserves may be overblown.

Further, the size and quadratic variable reverse signs when the sample is limited to those organizations with positive reserves (Column 3). However, size and the quadratic term are not significant when the top quartile is removed (Column 4). This suggests that size is not a good predictor of holding operating reserves. The notion that only small nonprofits hold little operating reserves while large nonprofits hold extreme levels is not supported here.

One important finding is that there is a consistently significant and negative relationship between operating reserves and public funds. If operating reserves serve to strengthen nonprofit financial health, public funds - whether because they seem less volatile to managers, or because of significant transaction costs, or some combination of each - reduce available operating funds that could fund gaps in revenues and expenses. Interestingly, for nonprofits with positive results and not in the top quartile (Column 4 of Table 5), the negative coefficient is small; this suggests that the negative influence of public funds is greater for those nonprofits with no or negative reserves.

Access to debt, fixed asset concentrations, and endowments all are consistently negative and significant, as expected. Having access to debt seems to increase the opportunity cost of holding reserves, resulting in decreased holdings; increased fixed asset concentrations seem to reduce financial distress costs, also resulting in less reserves; and more stable endowment income decreases the need for precautionary savings, so reserves decline.

An important question that arises from the data and empirical analyses is why do so many nonprofits not hold operating reserves? If operating reserves can smooth gaps between revenues and expenses, surely all organizations would be better off with them. Whereas Core and others (2006) and Ramirez (2010) indicate nonprofits hold adequate precautionary cash reserves, the data

here show that nearly 40 percent of the observations in the sample lack reserves (which are measured differently from cash); further, the empirical results indicate that there are many factors that influence nonprofits to reduce their operating reserves. Returning to the theory of why nonprofits might hold reserves, maintaining programmatic output was only one potential factor in understanding operating reserve holdings. The other was differential assessment of opportunity costs by nonprofits.

Nonprofits are under pressure to spend rather than save; this pressure might come from charitable rating groups or even the popular press. Rather than reserving money to reduce financial vulnerability, nonprofits may be spending to ensure their program expense ratios (that is, that ratio of program spending to total expenses) are at a sufficiently high level to avoid negative publicity. In this understanding, the opportunity cost of holding reserves is extremely high, and this leads to operating reserves being ignored as a primary goal of the organization. Stated another way, the “benefits of costs” outweighs the benefits of reserves. Another explanation is simply that the average nonprofit is on such a tight budget that no extra money can be reserved for a rainy day. This explanation, however, is actually just a different expression of the benefits of costs idea. If reserves had a lower opportunity cost, then organizations might substitute some spending for reserves. Disruptions to available cash flow, it must be remembered, have potentially adverse effects on operations because routine financial transactions (such as employee payrolls) can become extraordinary if there are no operating reserves on which to draw. As such transactions consume increased staff and managerial time, mission-oriented programs may be negatively affected because fewer resources are devoted to such output. Therefore, the accumulation of some operating reserves is not inherently zero-sum, in which the reserves are built at the expense of output.

Finally, many of the assumptions that underlie the articulated theories have not been valid at all times. For example, public funds may usually be very stable, but the recession that began in 2008 saw governments cut or delay payments to nonprofits to deal with their own budget crises. Further, many nonprofits lost access to debt as overall market liquidity dried up. Even the ability to collateralize fixed assets for borrowing became difficult as lending froze and property values fluctuated severely. Therefore, nonprofit managers and boards should be aware of the implications of these assumptions - that having no reserves is potentially devastating when, for example, a line of credit (which has a negative relationship to reserves according to the empirical analyses) relied upon for an external reserve suddenly disappears, a government does not pay its contracted agencies for several months (as has happened in Illinois), or a fixed asset viewed as convertible to cash suddenly is completely illiquid. All these happened in 2008 - 2010 in the nonprofit sector. Future research should certainly explore how those nonprofits with operating reserves managed operationally and programmatically through this period compared to those with no such reserves.

Conclusion

The operating reserves of nonprofits have received less focus in research than its importance to organizational management would suggest is appropriate. In this paper, the lack of operating reserves of much of the nonprofit sector is documented. Further, an empirical model based on differing organizational characteristics associated with resource volatility and differing organizational assessments of the opportunity costs of reserves and deficits is tested to analyze their influence on nonprofit operating reserves.

The empirical results based on a diverse sample find that organizations with positive operating reserves increase reserves as their fixed costs increase - perhaps to ensure that these expenses can be paid regardless of organizational output; increased concentrations of public funds (due either to their stability or transaction costs), access to debt, revenue diversity (which decreases revenue volatility), holding endowments (which generates stable income), and fixed asset concentrations (which can serve as collateral for borrowing) reduce reserve holdings. Reserves, however, are not influenced by the concentration of donation revenues, which suggests that nonprofit concerns that donors will react negatively to building reserves may be overblown. Given the large amount of nonprofits not holding any reserves, the results also suggest that the perceived costs of holding reserves must be relatively high, outweighed by the benefits of spending resources. Rather than reserving money to reduce financial vulnerability, nonprofits may be spending to ensure they are viewed as adequately meeting their missions.

Given how little we know about nonprofit reserves, future research is warranted on the topic. Importantly, given the lack of reserves for many nonprofits, we need to understand the implications for holding too few operating reserves; similarly, some nonprofits hold extraordinary levels of reserves and analysis should examine the consequences of this as well. For example, do these high or low reserve levels influence programmatic growth or capital investments? Do reserves predict financial distress? How did reserves help or not during the recession that began in 2008 and saw contractions in giving coupled with the loss of access to bank lending? Answers to these questions seem relevant and important for understanding and informing nonprofit financial health.

These results inform nonprofit management as well. If increasing operating reserves is a goal of management, then focusing on revenue diversification or different sources of revenue are predicted to be of little use. Efforts to diversify and commercialize the sector, therefore, are unlikely to generate reserves to increase organizational stability; in fact, these efforts are likely to use up managerial time and effort. Nonprofits also may want to consider reserving some endowment earnings to ensure adequate reserves are in place in case these revenues are not generated. Finally, the low reserves of the sector may be the result of managerial choice to maximize service offerings, a result of poor financial management skills (such as a lack of cash flow forecasting and budgeting), subsector characteristics, or some

combination of these and other factors. If poor skills are in fact a problem, then schools and educators have a clear role to play in helping nonprofits understand why reserves are essential, how to acquire them, and how to manage them.

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| Table 1: Summary of Sample Selection and Data Cleaning | |
|--|-----------|
| Beginning Sample Size | 1,388,480 |
| less: Organizations Filing 990EZ (no detail on net asset restrictions) | 283,814 |
| less: Organizations not compliant with FASB 117 (no detail on net asset restrictions) | 307,358 |
| less: Organizations not reporting on the accrual basis (no liabilities reported) | 219,251 |
| less: Organizations with data flagged as erroneous by NCCS (line item totals do not sum correctly and are more than 25 percent inaccurate) | 6,067 |
| less: Organizations with obvious data errors (such as negative assets or liabilities, negative expenses, no program expenses, no administrative expenses, program expenses in excess of total expenses, no industry classification code) | 51,641 |
| Final Sample Size | 520,349 |

Table 2: Description of Variables for the 1998-2003 Sample

| Variable | Definition | Mean | Median | Standard Deviation | Minimum | Maximum |
|----------------|--|-------|--------|--------------------|---------|---------|
| Reserves1 | [Unrestricted Net Assets - Property, Plant, and Equipment, net of Long-Term Debt]/Total Expenses-Depreciation | -0.18 | 0.09 | 4.98 | -24.81 | 22.46 |
| Reserves2 | [Unrestricted Net Assets - Property, Plant, and Equipment, net of Long-Term Debt - Receivables - Inventory - Prepaid Expenses]/Total Expenses-Depreciation | -0.52 | -0.02 | 5.01 | -26.69 | 20.43 |
| RDI | Revenue diversification index (0 = total concentration) | 0.34 | 0.31 | 0.28 | 0.00 | 0.88 |
| Fixed Costs | Ratio of occupancy, interest, and depreciation to total expenses | 0.11 | 0.07 | 0.15 | 0.00 | 0.75 |
| Public Funds | Ratio of public grants and contracts to total revenue | 0.21 | 0.00 | 0.33 | 0.00 | 1.00 |
| Access to Debt | Equals 1 if nonprofit has financial debt outstanding | 0.38 | 0.00 | 0.49 | 0.00 | 1.00 |
| Donations | Ratio of total direct contributions and special event revenue to total revenue | 0.33 | 0.16 | 0.36 | 0.00 | 1.00 |
| Fixed Assets | Ratio of fixed assets to total assets | 0.32 | 0.21 | 0.32 | 0.00 | 0.97 |
| Endowment | Ratio of permanently restricted net assets to total assets | 0.04 | 0.00 | 0.14 | 0.00 | 0.80 |
| Size | Natural log of total assets | 13.63 | 13.59 | 2.10 | 7.95 | 19.10 |

Table 3: Nonprofit Characteristics by Operating Reserves Quartiles

| Variable | First Quartile | Second Quartile | Third Quartile | Fourth Quartile |
|----------------|------------------|------------------|------------------|------------------|
| Reserve Range | (24.81)-(0.22) | (0.22)-0.09 | 0.09-0.50 | 0.50-22.46 |
| Reserve1 | -4.47 (-1.31) | -0.02 (0.00) | 0.07 (0.12) | 3.51 (1.31) |
| RDI | 0.32 (0.25) | 0.31 (0.24) | 0.36 (0.34) | 0.39 (0.39) |
| Fixed Costs | 0.23 (0.14) | 0.07 (0.05) | 0.07 (0.05) | 0.08 (0.04) |
| Public Funds | 0.20 (0.00) | 0.31 (0.05) | 0.24 (0.01) | 0.10 (0.00) |
| Access to Debt | 0.85 (1.00) | 0.37 (0.00) | 0.18 (0.00) | 0.12 (0.00) |
| Donations | 0.19 (0.03) | 0.29 (0.10) | 0.37 (0.24) | 0.48 (0.48) |
| Fixed Assets | 0.66 (0.72) | 0.28 (0.20) | 0.21 (0.11) | 0.14 (0.03) |
| Endowment | 0.04 (0.00) | 0.04 (0.00) | 0.04 (0.00) | 0.06 (0.00) |
| Size | 14.44 (14.40) | 12.87 (12.86) | 13.14 (12.94) | 14.06 (13.87) |

The means and medians of measures of nonprofit characteristics of 520,349 observations from the 1998 - 2003 sample of U.S. public charities. Median values are in brackets below the mean values. Each quartile contains 130,087 observations.

Table 4: Nonprofit Characteristics by Operating Reserves Group

| Variable | Negative and Zero Reserves (1) | Positive Reserves (2) | <i>t-value, Comparing Negative and Positive Reserve Groups</i> | Positive Reserves, Excluding Top Quartile (3) | <i>t-value, Comparing Top Quartile and Other Positive Reserve Groups</i> |
|----------------|--------------------------------|-----------------------|--|---|--|
| Reserve Range | (24.81)-0.00 | 0.00-22.46 | | 0.00-0.50 | |
| Reserve1 | -2.91 (-0.47) | 1.55 (0.36) | -3.50*** | 0.19 (0.17) | -273.05*** |
| RDI | 0.32 (0.25) | 0.36 (0.34) | -52.56*** | 0.34 (0.31) | -46.17*** |
| Fixed Costs | 0.18 (0.10) | 0.07 (0.05) | 266.52*** | 0.07 (0.05) | -33.89*** |
| Public Funds | 0.23 (0.00) | 0.20 (0.00) | 29.84*** | 0.27 (0.03) | 1.60*** |
| Access to Debt | 0.71 (1.00) | 0.17 (0.00) | 470.46*** | 0.20 (0.00) | 59.27*** |
| Donations | 0.22 (0.05) | 0.40 (0.30) | -1.80*** | 0.35 (0.19) | 96.08*** |
| Fixed Assets | 0.53 (0.60) | 0.19 (0.08) | 452.94*** | 0.22 (0.12) | -94.38*** |
| Endowment | 0.04 (0.00) | 0.04 (0.00) | -2.63*** | 0.03 (0.00) | -49.61*** |
| Size | 13.93 (14.03) | 13.44 (13.29) | 82.33*** | 13.01 (12.85) | -148.01*** |
| N | 201,696 | 318,653 | | 188,566 | |

The means and medians of measures of nonprofit characteristics of 520,349 observations from the 1998 - 2003 sample of U.S. public charities. Median values are in brackets below the mean values. Column 1 includes observations with negative or zero reported operating reserves. Column 2 includes only those observations with nonnegative operating reserves. Column 3 is similar to Column 2, but excludes those observations in the fourth (top) reserves quartile from Table 3. The first *t-statistic* is a difference of means test between observations with negative or zero operating reserves and those with reserves. The second *t-statistic* is a difference of means test between the fourth (top) quartile (from Table 3) and nonprofits with positive reserves but not in the fourth quartile (column 3 of Table 4). *** significant at 1%

Table 5: Regression Results Predicting Nonprofit Operating Reserves

| Independent Variable | Full Sample (1) | Full Sample with Control for Change in Reserves (2) | Organizations with Positive Operating Reserves Only (3) | Organizations with Positive Operating Reserves Only and not in Top Quartile (4) |
|-------------------------|--------------------|---|---|---|
| RDI | -0.09** (0.04) | -0.08** (0.04) | -0.11*** (0.04) | 0.01 (0.00) |
| Fixed Costs | -0.43* (0.25) | -1.32*** (0.24) | 1.20*** (0.33) | 0.07*** (0.02) |
| Public Funds | -0.14*** (0.43) | -0.14*** (0.04) | -0.16*** (0.00) | -0.01*** (0.00) |
| Access to Debt | -0.18*** (0.02) | -0.36*** (0.02) | -0.24*** (0.00) | -0.02*** (0.00) |
| Donations | -0.11* (0.06) | -0.10* (0.05) | -0.06 (0.06) | -0.01** (0.00) |
| Fixed Assets | -0.64*** (0.06) | -1.61*** (0.06) | -1.46*** (0.08) | -0.11*** (0.01) |
| Endowment | -0.73*** (0.12) | -1.41*** (0.13) | -1.72*** (0.14) | -0.09*** (0.01) |
| Size | 0.67*** (0.11) | 0.66*** (0.10) | -0.34*** (0.11) | 0.00 (0.01) |
| Size Squared | -0.03*** (0.00) | -0.03*** (0.00) | 0.44*** (0.01) | 0.00 (0.00) |
| Change in Reserves | | 0.47*** (0.01) | 0.44*** (0.01) | 0.03*** (0.00) |
| Constant | -3.32*** (0.61) | -3.14*** (0.53) | 2.56*** (0.59) | 0.14*** (0.04) |
| F-Test | 31.56*** | 597.62*** | 367.50*** | 41.06*** |
| Years F-Test | 15.95*** | 9.76*** | 46.84*** | 14.89*** |
| Adjusted R ² | 0.90 | 0.94 | 0.92 | 0.65 |
| Observations | 368,560 | 368,560 | 225,288 | 134,739 |
| Organizations | 105,872 | 105,872 | 73,505 | 51,445 |

The dependent variable in all regressions is Reserves1 - defined as [Unrestricted Net Assets - Property, Plant, and Equipment, net of Long-Term Debt]/Total Expenses-Depreciation. Independent variables are lagged one year. Robust standard errors clustered by nonprofit organization are in parentheses. Column 2 includes the current year change in operating reserves to control for current year changes in operating reserves. Column 3 includes only those nonprofits with reserves that are positive, and Column 4 includes those nonprofits with

positive reserves and also not in the top quartile of the sample. *** significant at 1% ** significant at 5% * significant at 10%

End Notes