A Methodology for Measuring the Financial Vulnerability of Charitable Nonprofit Organizations

Howard P. Tuckman, Cyril F. Chang

This article defines a charitable nonprofit organization as financially vulnerable if it is likely to cut service offerings immediately when a financial shock occurs. It discusses why the vulnerability of the nonprofit sector is of interest to researchers, explores the destabilizing role of third-party finance, considers the reasons for the lack of research on vulnerability, and presents a conceptual framework for identifying financially vulnerable nonprofits. Four vulnerability criteria are defined and applied to a 1983 national sample of tax returns filed by 4,730 U.S. charitable nonprofits. The financial data of at-risk organizations are then analyzed to discern the characteristics of vulnerable and other nonprofit organizations.

A charitable nonprofit organization's financial condition depends on many factors: the generosity of its supporters; the adequacy, stability, and diversity of its revenues; the quality of its management; its capacity to withstand revenue fluctuations; and the size of its capital. Differences in these factors put some nonprofits in a favorable position to withstand financial shocks, while others are extremely vulnerable. The literature concerned with nonprofit organizations contains limited discussion of how to identify the organizations most vulnerable to financial shocks.

This article defines a nonprofit as financially vulnerable if it is likely to cut back its service offerings immediately when it experiences a financial shock. The analysis begins with a discussion of why the vulnerability of the nonprofit sector is of interest to researchers and policymakers. An examination of the destabilizing role of third-party finance and the reasons for the lack of research on vulnerability follows. Next, a conceptual frame-

Note: The authors acknowledge partial assistance from the Avron B. and Robert F. Fogelman Research Excellence Fund and the research assistance of Pichu Tang.

work is proposed for identifying nonprofits that are most likely to be vulnerable to financial shocks, and six categories of nonprofits are analyzed. The data come from a 1983 national sample of tax returns of 4,730 charitable nonprofit organizations compiled by the United States Internal Revenue Service (IRS).

Why Financial Vulnerability Is of Interest

Why should the financial vulnerability of the nonprofit sector be of interest? One reason is that the sector is large. It has been growing rapidly over time, and it affects a large number of people. In 1960, for example, the sector had $18.4 billion in operating expenditures. These disbursements constituted 5.6 percent of total personal consumption expenditures in the United States and 13.7 percent of all the expenditures on services in that year. By 1987, the operating expenditures of the sector had risen to $290.5 billion, which represented 9.6 percent of total personal consumption and 18.2 percent of all expenditures on services. INDEPENDENT SECTOR, a Washington-based research and lobbying organization, estimates that in 1987 the total income directly generated by the charitable nonprofit sector was $247.1 billion. This represented 5.8 percent of the total national income for the United States (Hodgkinson and Weitzman, 1989, pp. 15, 35).

Moreover, the nonprofit sector also has a substantial impact on employment. Charitable nonprofits employed approximately 9.6 million persons. Of this number, approximately 5.7 million were paid, while the remaining 3.9 million were volunteers. Given the large number of people involved, the vulnerability of nonprofits has considerable effects both on employment and career advancement opportunities and on the institutions that train people for employment in the charitable nonprofit sector.

As nonprofits find it necessary to respond to financial pressures by reducing service offerings, a demand arises for government to fill the gap. Shocks to the nonprofit sector increase demands on the public treasury.

There are other than economic reasons why we should be concerned with the vulnerability of the nonprofit sector. The nonprofit sector is an important source of diverse ideas and alternative delivery modes for public services as well as a vehicle through which minority demands for public goods can be satisfied (Douglas, 1987; Weisbrod, 1988). These roles are threatened when a large number of nonprofits become financially vulnerable. The sector is also an important expression of the pluralistic approach that underlies the American system of government. Moreover, it is the primary source of private charity in the United States. If the sector should prove to be vulnerable, this would suggest that a major part of the country's service delivery system might falter during an economic downturn.

Third Parties and Revenue Instability

It is useful to consider the role that third-party funding plays in creating financial vulnerability in the nonprofit sector. Nonprofits require at least some subsidy, because most of them define themselves as *bonoficers* (organizations that provide services to individuals irrespective of the recipient's ability to pay). This dependency on the munificence of funders rather than on the satisfaction of customers makes nonprofits more subject to revenue instability than organizations that operate under a quid pro quo arrangement. Consider, for example, the relationship between donors and a recipient organization. Donations are voluntary and contingent on the good will of contributors. A nonprofit that does a good job of satisfying its consumers will not necessarily increase its donations. This is because donations are not directly based on the work that the recipient organization does but rather on the satisfaction that donors receive from contributing to an organization.

Instability in the donor base can emanate from several sources. To the extent that a nonprofit relies on donations, it is subject to changes in the tastes and preferences of donors. If, for example, it is fashionable for donors to fund AIDS research one year and cerebral palsy the next year, the nonprofits working in these areas will experience considerable fluctuations in their revenue base.

A second source of unstable donations is changes in the economy. When personal disposable income decreases, donations may be among the first discretionary items that donors cut. The same may be true for contributions from foundations. Since these entities receive no direct benefit from funding nonprofit organizations, they have less incentive to maintain their contributions than entities that stand to lose if they cease to donate. In the case where a nonprofit has a quid pro quo arrangement with a third party, a weaker case can be made that third-party funding is a source of revenue instability. For example, a Blue Cross insurance organization that reduces its reimbursements to nonprofit hospitals will eventually cause hospitals to reduce their services. This in turn will make it more difficult for the Blue Cross organization to serve its customers. Thus, it is less likely that a Blue Cross will cut its subsidies to the hospitals than it is that a donor will reduce his or her payments to a local art museum.

A third source of instability in the donor base is changes in tax laws. These changes usually have little to do with the merits of the services that nonprofits provide or with their programmatic needs. Weisbrod (1988) argues that revisions in the tax law affect the net price that a donor pays to make a donation. When that price rises, donations to nonprofits fall, irrespective of how well nonprofits accomplish their missions. Uncertainties regarding changes in the tax laws create uncertainties in nonprofit revenue flows.

While donations are an important source of revenues for some categories of nonprofit organizations, Salamon and Abramson (1982) have shown that federal subsidies are the major source of subsidy for most nonprofits. Since the federal government continues to fund some social service programs even when its general revenues decline, it is tempting to argue that the presence of this funding source reduces revenue instability in the nonprofit sector. In our view, this is not the case for several reasons. First, while nonprofits receive the credit for services funded by government, they also get blamed for a service cutback when funds are cut off. Since politicians earn little credit for a nonprofit's success and feel relatively little retribution when subsidies to nonprofits are cut, nonprofit funding is an attractive target during a budgetary crisis. This political factor makes public subsidies sensitive to changes in federal revenues. Second, the perception of nonprofits as bonoficers has caused the government to expect nonprofits to share in the costs of providing important social services. For example, Medicare and Medicaid reimburse hospitals for only part of the total costs that they incur to serve those eligible for these programs. The government leaves it to hospitals (mostly nonprofit institutions) to finance the revenue shortfalls from treating Medicare and Medicaid patients (Tuckman and Chang, in press). Likewise, the National Endowment for the Arts pays only a portion of the cost of an exhibition, expecting nonprofits to cover the rest. Third, nonprofit accounting systems are often less rigorous than those preferred by government, and this puts pressure on nonprofits to produce evidence of acceptable performance. It also increases the ever-present threat of revenue cutbacks if government auditors do not approve a nonprofit's uses of funds.

To the extent that nonprofits are faced with persistent revenue instability, they are likely to find it difficult to take the steps necessary to reduce their financial vulnerability. Although a nonprofit facing volatile revenues has a strong incentive to find additional revenue sources, it may lack the time or staff needed to pursue this goal actively. Similarly, an organization that finds it difficult to retain some of its revenues at the end of the year may not be able to develop the equity base needed to provide a cushion against financial shocks. For these reasons, over time, nonprofits that experience revenue instability are more likely to remain financially vulnerable than those that do not.

Lack of Research on Vulnerability

Why has so little research been done on the vulnerability of nonprofit organizations? The answer is found on both a practical and a conceptual level. With respect to the former, it is likely that the number of severely vulnerable organizations is fairly small. The IRS reported that approximately 422,100 active 501(c)(3) organizations existed in the United States in 1987

(Hilgert and Mahler, 1989). Using the approach spelled out later in this article, we find that only about 1 percent of all the nonprofits that reported data to the IRS were severely at risk in taxable year 1983. When this percentage is multiplied by the total number of nonprofits in 1987, it suggests that approximately 5,065 organizations were severely at risk in that year. This is a relatively small number, and, if it is valid, the problem of vulnerability may not be serious.

A second reason why not much research has been done on this subject is that very little information is available to inform the general public. For example, data on nonprofit failures are for the most part inaccessible. In contrast to the widely publicized Business Failures Index compiled by the U.S. Commerce Department, nonprofit failures are largely unnoticed. Our extended discussions with several IRS officials suggest that even the IRS does not have an accurate count of the number of failed nonprofits each year. At present, to our knowledge, there are no reliable data on the number of nonprofits that die, although attempts have been made to estimate this number (Chang and Tuckman, in press). Similarly, it is not clear from the available data whether some types of organizations are more likely to die than others.

Most nonprofits serve the needs of only a fraction of the total population. What happens to the local art gallery is of concern primarily to the art-seeking local public, while the fate of a community clinic is a major concern to those whom it helps. To the extent that the constituency of the nonprofit sector is fractionated and in the minority, considerable transaction costs are involved in identifying the effects of a decline in program services. If the government does not collect data or report on the financial health of this sector, the costs to individual organizations are likely to be too great for them to engage in extensive research on the collective financial condition of the sector.

Some data are available, and these are based largely on the tax returns that nonprofits file with the IRS. While the IRS data base is important for research, it is largely inaccessible to the public. Moreover, a project funded by INDEPENDENT SECTOR reveals that the IRS data are heavily skewed to large nonprofits and that they underrepresent churches (Hodgkinson and Weitzman, 1989). To the extent that small nonprofits account for a disproportionate share of the vulnerable organizations, this data base tends to understate the financial difficulty of the nonprofit sector. Individual data bases exist for certain individual industries of the sector—for example, educational institutions, hospitals, and nursing homes. However, they do not reflect the full universe of nonprofits in the area they represent.

Several conceptual problems have also prevented researchers from venturing into this area. A logical approach to the measurement of vulnerability would be to use cross-section or time series data to relate specific financial shocks to the direct effects that these have on the program outputs of

individual nonprofits. This can be done with what economists refer to as the *production function approach.* One major drawback to this approach is that it requires output to be quantified, and this poses serious problems because the outputs and missions of nonprofits are diverse and difficult to quantify (Kanter and Summers, 1987). Consequently, data limitations have precluded such an investigation. Such output measures as indexes of production or of the dollar value of goods and services are fraught with measurement problems, and these make direct study of the impact of financial shocks on the output of nonprofits difficult.

Another issue is the period of time that should be used to measure how long it takes for nonprofits to respond to a financial shock. A related question is whether to use yearly or monthly data to measure response. Still another involves whether to use a model that allows for lagged response to a financial shock. In the design of a methodology to capture these responses, a strong case can be made for the use of tax data for several years. However, panel data of the type needed to support a representative study of nonprofit behavior are not available. The effort and expense required to construct such a panel data base make it difficult for most researchers to undertake such an inquiry.

Given this formidable set of problems, it is not surprising that researchers have largely confined their attention to the study of financial ratios as a basis for forecasting nonprofits in financial trouble (Cleverley and Nilsen, 1980; Chabotar, 1989). The problem with this type of study is that it is better able to predict when a nonprofit will face financial difficulties than when the nonprofit will reduce its output. While both concepts are of interest, they do not address the same problem. This leaves unresolved the question of which nonprofits are most likely to be vulnerable. A methodology is needed to enable researchers to identify those nonprofits that are likely to reduce program output when a financial shock occurs.

Relative Definition of Financial Vulnerability

To avoid the problems just discussed, we adopt a methodology that does not involve a direct output measure. Instead, the focus is on the options available to nonprofits if a financial shock affects them. Four criteria are used to identify nonprofits with the least flexibility to withstand financial shocks. Financial flexibility is assumed to exist if an organization has access to equity balances, many revenue sources, high administrative costs, and high operating margins. Organizations that lack flexibility are assumed to be more vulnerable than organizations with flexibility. We explain each of the criteria in the next section.

A ranking procedure is used to determine which nonprofits are vulnerable. The procedure assumes that nonprofits that fall into the lowest quintile with respect to the four criteria just outlined are the ones most likely not to

withstand a financial shock. Two levels of vulnerability are established. An at-risk measure identifies nonprofits in the bottom quintile with respect to any one of the four criteria, while a severely-at-risk measure identifies those in the bottom quintile with respect to all four criteria.

Since our vulnerability measure is a relative measure, several types of comparisons can be made. The first compares each nonprofit with the other nonprofits in its own category. For example, hospitals are compared with other health care institutions, and hospitals with the most limited financial sources are assigned to the bottom quintile. The second approach compares hospitals with all the nonprofits in the sample. If a particular hospital's financial resources are more limited than those of all other nonprofits in the data base, it is assigned to the bottom quintile of the sample. Both types of comparisons are useful, and each gives somewhat different answers. Consequently, we present the results for both methods. Comparisons of the first type are labeled *own-category*, while comparisons of the second type are called *whole-sample*.

It is useful to note at least two criticisms that can be raised against our methodology. First, nonprofit organizations may discover new revenue sources. For example, donors may be found to cover revenue shortfalls temporarily, and new revenues can reduce vulnerability. We believe that there are not many situations in which this will occur. Most financially troubled nonprofits do not have the resources to embark on a fund-raising campaign when they experience a sudden drop in revenues, and even if they do, the returns from such a campaign are unlikely to arrive soon enough to forestall service cutbacks. Second, vulnerability to a revenue shock depends in part on the size of the financial shock. A major shock, such as an economywide recession, could cause widespread shortfalls that jeopardize all nonprofits. We contend that our methodology can identify the nonprofits that are likely to be the first to feel the financial pressure. It will not identify all the nonprofits that will be vulnerable under all circumstances. While some readers may find our measure less desirable than one that provides a continuous measure of the effects of financial shocks, it should be noted that our approach explores the vulnerability question with existing data, while the continuous measure requires data that are not available in existing data bases.

Four Operational Criteria

Inadequate Equity Balances. Nonprofits with large amounts of equity are in a better position to borrow funds than nonprofits with little or no equity. Equity is the amount left over when a nonprofit's liabilities are subtracted from its assets. Nonprofit equity can be held in restricted or unrestricted accounts and in liquid (for example, cash and negotiable securities) or illiquid (for example, real estate) form. Its use can be restricted by

conditions placed by bequest or by the donor or in response to board of directors directives that funds be segregated for a specific use. When restrictions apply to the use of equity, it is difficult to convert it directly into a form that allows replacement of lost revenues. For example, a donation made to an art museum for the purpose of bringing an exhibit to a city cannot be used to support administrative overhead. Likewise, funds accumulated to purchase services for the poor cannot be used to build a new building. Restrictions on the use of equity limit the extent to which nonprofits can use equity balances to offset revenue shocks.

Nonetheless, equity balances are important to the financial health of a nonprofit in at least four ways. First, within limits, a nonprofit can use these balances to seek funds from capital markets. Normally, the funds borrowed in capital markets cannot be used to fund an organization's operations. However, existing properties can be refinanced to free up funds, or a mortgage can be obtained on a building that was debt free. The ability to borrow can give a nonprofit flexibility in time of crisis. Second, to the extent that a nonprofit holds equity in the form of unrestricted liquid assets, these assets can be converted into cash to replace lost revenues temporarily. Third, if a revenue downturn persists, a nonprofit's unrestricted illiquid assets can be sold off and used to offset losses. For example, subject to IRS regulations, a nonprofit can sell land bequeathed to it by a donor, or it can sell off its parking lot or stock or bond holdings. Fourth, a nonprofit can alter the mix of services that it offers so that a higher proportion of its services are in a form that permits use of restricted funds. For example, a hospital that experiences a decline in occupancy can fill empty beds with indigent patients and finance a part of its operating fund deficit from the indigent care fund.

To operationalize the potential that nonprofits have to find replacement revenues, we have chosen a relative measure—the ratio of equity to total revenue. The implicit assumption is that organizations with a larger net worth relative to revenue have a greater ability to replace revenue than those with a smaller or negative net worth. The use of this measure does not imply that nonprofits can convert equity to revenue on a dollar-for-dollar basis. It does suggest that financial markets will be more likely to assist nonprofits with large ratios than those with smaller ratios. Nonprofits with the least equity relative to revenues (namely, those in the bottom quintile) are labeled at-risk.

Revenue Concentration. A nonprofit is more vulnerable to revenue downturns if its revenue sources are limited than if they are diverse. This is because a shock is more likely to affect one revenue source than it is to affect all sources at once. The larger the number of revenue sources a nonprofit has and the more equally divided its share of revenues from each source is, the less vulnerable it tends to be. For example, a temporary decline in donations to a nonprofit health clinic may be offset by an

increase in the amount that it charges its patients. Similarly, a decline in federal funds to an agency financing foreign aid may be offset by an increase in contributions from a private foundation. To measure revenue concentration, we constructed an index similar to the Herfindahl Index used in economics to measure market concentration. For each nonprofit, the square of the percentage share that each revenue source represents to total revenue is summed to produce an index. This provides a revenue concentration measure that captures both the number of revenue sources and the extent of revenue dispersion. Our index employs the five revenue sources that are available from the IRS Form 990: revenues from contracts, gifts, and grants; program service revenue; membership dues; sales of unrelated goods; and investment income. A nonprofit with revenues from a single source will have a concentration index of one, while a firm with equal revenues from many sources will have an index close to zero. Nonprofits in the bottom quintile with respect to revenue concentration (those with an index closest to one) are labeled at risk.

Low Administrative Costs. When revenues decline, a third possible recourse open to nonprofits is to cut administrative costs. Nonprofits with high administrative costs (relative to others in their category) are assumed to have the greatest opportunity to cut back on administrative costs without reducing programs. Those with low administrative costs are assumed to have fewer opportunities to reduce expenditures without having an impact on the services that they provide. The operational measure used is the ratio of administrative expenses to total expenses. Nonprofits in the bottom quintile with respect to administrative costs are labeled at risk.

Low or Negative Operating Margins. A nonprofit's operating margin is defined as its revenues less its expenditures, divided by its revenues. This shows the percentage that its net income represents of its revenues. Thus, for example, a nonprofit with a margin of 15 percent has net income or surplus equal to 15 percent of the revenues that it earned in that year. The larger the percentage, the larger the potential surplus that a nonprofit has to draw on if its revenues subsequently start to decline. When it draws from its surpluses, a nonprofit's operating margin begins to decline, and in the next period it is less. A large margin also provides a nonprofit with funds that can be saved to build equity. If a nonprofit has a low or negative operating margin, this means that it has little or no cash surplus that can be drawn down before it must cut program support. A nonprofit with a negative margin is already likely to be in the process of reducing program offerings. Nonprofits in the bottom quintile with respect to operating margins are labeled at-risk.

Empirical Analysis

Data Base. The analysis that follows is based on a random sample drawn from the universe of all nonprofits that filed an annual Form 990 tax return

with the IRS in the 1983 tax year. We have already discussed the limitations of this sample. The basic unit is the filing organization, and the sample consists of 4,730 nonprofits with gross receipts in excess of $25,000. For descriptive purposes, we have used a six-category typology to characterize the nonprofits in the sample.

Religious Institutions. Institutions that classify themselves as religious business organizations include institutions with a single theological purpose and those engaged in multiple mission-related activities. For example, some churches have educational, health care, housing, and counseling businesses in addition to tending to the spiritual needs of their members. If only one Form 990 is filed for these enterprises, that form is in this category. Alternatively, if multiple Form 990s are filed, only the theological entity is included here. Excluded are small churches, interchurch organizations, auxiliaries, mission societies, and exclusively religious activities of religious orders and other entities not required to file by the IRS.

Educational Institutions. Educational institutions are institutions that classify themselves as educational. All levels of education are included: preschool, elementary, secondary, trade school, vocational, and higher. Some institutions run ancillary businesses, such as dormitories, bookstores, and cafeterias, and the nonprofit activities of these entities that are reported in consolidated form are included. Some parent institutions file a single form for activities at multiple sites, while others file separate forms.

Health Care Institutions. Health care institutions are institutions engaged primarily in the provision of health care services. These include organizations sponsored by religious orders that file a Form 990 separate from that of their religious sponsor. Also included are units that either have one function or that file a form separate from their sponsor. These include clinics, freestanding institutions, hospices, mutual benefit hospitals, and nursing homes.

Charitable Institutions. Charitable institutions include 501(c)(3) institutions that provide a wide variety of charitable functions, such as dispensing rehabilitation services, feeding refugees or persons in foreign countries, feeding the domestic poor, preserving the environment, providing planned parenthood services, and providing free legal aid. Also included are nonprofits set up by governments to dispense charitable services.

Support Organizations. Support organizations include a variety of organizations set up to support educational, health, and welfare organizations and to promote various types of research. The category includes college athletic and education foundations, Community Chest organizations, United Way organizations, and hospital foundations set up to support one or more activities of their beneficiaries.

Other Organizations. The other organizations category includes three types of Form 990 organizations: government, consumer testing organizations, and unidentified organizations. The first category consists of entities

like hospital or airport authorities, the second of organizations that test various consumer products in the public interest, and the third of unidentified organizations that did not identify their mission to the IRS.

Distribution of Vulnerable Organizations

Table 1 shows three types of data. First, the number and percentage of organizations in each of the six categories are presented in columns 1 and 2. Second, the percentages of nonprofits in each organizational category identified as severely at risk and as at risk based on the whole-sample method appear in columns 3 and 4. Third, the same percentages computed with the own-category method are given in columns 5 and 6.

Columns 1 and 2 reveal substantial differences in the number of nonprofits in each category. For example, religious institutions represent only 54 or 1 percent of the 4,730 nonprofits in the sample. As noted earlier, this is because most churches are not required to file with the IRS. In contrast, the 1,926 health care organizations represent about 41 percent of the sample. These figures are useful for comparison with the distributions of at-risk and severely-at-risk groups.

Both the whole-sample and the own-category selection methods result in a similar number of at-risk and severely-at-risk organizations. In percentage terms, both methods indicate that approximately 0.11 percent of the nonprofits in the sample are severely at risk, while approximately 41 percent are at risk. This suggests that very few nonprofits are extremely

Table 1. Vulnerable Nonprofits by Category, 1983 Tax Year

	Total Sample		*Bottom Fifth of the Whole Sample*		*Bottom Fifth of Each Category*	
	(1)	*(2)*	*(3)*	*(4)*	*(5)*	*(6)*
Category	*Number*	*%*	*Severely at Risk (%)*	*At Risk (%)*	*Severely at Risk (%)*	*At Risk (%)*
Religious	54	1.1	20.0	1.2	20.0	1.2
Educational	1,080	22.8	0	9.6	20.0	21.2
Health care	1,926	40.7	20.0	50.6	20.0	42.5
Charity	427	9.0	0	11.3	0	8.6
Support	1,173	24.8	60.0	25.8	40.0	25.1
Other	70	1.5	0	1.4	0	1.4
Total		100%	100%	100%	100%	100%
Total number	4,730		5	1,951	5	1,969
(Percentage)		(100%)	(0.11%)	(41.3%)	(0.11%)	(41.6%)

Note: Columns 1 and 2 are based on data for entire sample. Columns 3 and 4 are based on bottom quintile organizations from the entire sample. Columns 5 and 6 are based on ranking of nonprofits within their own category.

vulnerable to financial shocks, while four in every ten are potentially vulnerable under at least one of the four vulnerability criteria. The number of nonprofits selected from each of the six organizational categories is not the same under the whole-sample and own-category approaches. This is because the latter method leads to a representation of the categories similar to that in column 2, while the first method does not.

Columns 3 and 4 use the whole-sample method, while columns 5 and 6 use the own-category approach. Comparison of the distribution of severely-at-risk nonprofits across organizational types (columns 3 and 5) with the overall percentage distribution of the whole sample (column 2) reveals that differences exist in extreme vulnerability among the various types of nonprofits. Support organizations are overrepresented, while charity and other organizations are underrepresented in the severely-at-risk group. These are shown primarily to provide a reference point for the results that follow.

Note that the total numbers of severely-at-risk nonprofits in both columns 3 and 5 are about 0.11 percent of the total sample, reflecting in part the stringent criteria used to select these organizations. Under the at-risk definition, in contrast, columns 4 and 6 show that four in ten organizations are potentially vulnerable. Contrasting these results with those in column 2, we find that educational organizations are less likely to be at risk than expected under the whole-sample method but not under the own-category approach. Similarly, health care institutions are more likely to be at risk when the former method is used. The fact that the two methods result in different percentages for each category should not be surprising. The whole-sample approach selects organizations relative to all others in the sample and thus is not constrained by the fact that each category has a bottom quintile of vulnerable organizations. In contrast, the own-category method selects nonprofits in the most precarious position within a category. A synthesis of the findings produced by the two methods suggests that nonprofits in the support and health care categories are most likely to be severely at risk, while those in the religious, charity, and other categories are less likely to fall under this label.

Financial Comparison of the At-Risk Groups

Table 2 shows the mean values for six financial characteristics of the at-risk and severely-at-risk groups based on the whole-sample and own-category methods. Mean values for the whole data base are also shown for comparison purposes. Six interesting insights are worth pointing out. First, the average revenue of the severely-at-risk nonprofits is substantially lower, while the average revenue of the at-risk nonprofits is slightly higher than the sample average. This suggests that an inverse relationship exists between a nonprofit's revenue and the risk it faces. Second, nonprofits with low equity levels are the ones most likely to be defined as financially

Table 2. Financial Characteristics of Charitable Nonprofits

Select Characteristics of Nonprofits	*Mean Values*	
	Whole-Sample Method	*Own-Category Method*[a]
Average Revenue ($000)		
Total	$33,642	$33,585
At risk	$37,451	$38,252
Severely at risk	$1,330	$9,210
Average Equity ($000)		
Total	$30,173	$30,090
At risk	$18,668	$22,822
Severely at risk	-$941	$6,584
Long-Term Debt to Total Assets Ratio		
Total	0.33	0.32
At risk	0.47	0.44
Severely at risk	1.06	0.91
Current Ratio		
Total	27.09	29.26
At risk	16.57	18.58
Severely at risk	NA	10.78
Percentage of Revenue from Program Service		
Total	72%	60%
At risk	81%	76%
Severely at risk	NA	97%
Revenue to Assets Ratio		
Total	1.02	1.02
At risk	1.62	1.57
Severely at risk	0.14	0.27

Note: NA means that the number cannot be calculated.

[a]The numbers are weighted averages based on proportional weights for each of the six categories.

vulnerable under our criteria. Third, the long-term debt to long-term assets ratio is higher for at-risk nonprofits than it is for the average nonprofit, and it is considerably higher for the severely at risk. Fourth, vulnerable nonprofits are less liquid than other nonprofits as measured by the current ratio. Fifth, both the at-risk and the severely-at-risk nonprofits receive a higher percentage of revenue from program service than the average nonprofit. This suggests that vulnerable nonprofits are likely to depend more on program service revenue than the average nonprofit. Finally, the ratio of revenues to assets is larger than average for the at-risk group and considerably smaller for the severely-at-risk group, indicating that the latter have much less revenue than assets.

Types of Nonprofits Most Likely to Be Vulnerable

Because the categories used in this study contain a diverse group of nonprofit organizations, it is useful to further disaggregate the severely-at-risk category to provide a clearer insight into the most vulnerable nonprofits. Table 3 identifies these organizations under the whole-sample approach. Note that close to 40 percent of the severely-at-risk organizations were housing development organizations in taxable year 1983. The rest are civic, medical, and religious organizations.

Implications of the Analysis

One important finding of this study is that a majority of the nonprofits that report to the IRS have recourse to more than one means to offset the effects of an economic downturn. This should be encouraging for those concerned with the viability of this sector. Another interesting finding is that substantial differences exist within the several categories of nonprofits, and only a small percentage of nonprofits (about 1 percent) appear to be severely at risk. The whole-sample and own-category methodologies presented in this article produce somewhat different findings with respect to the vulnerable organizations. Thus, it is useful to consider both sets of results in judging which nonprofits are vulnerable.

Our results suggest that the health care and support categories are the ones most likely to be impacted by a financial shock, a finding consistent with that of Salamon and Abramson (1982). However, the reader should bear in mind the bias introduced by the use of the IRS data base. Since small organizations are underrepresented, it is likely that our study does not fully capture the financial problems of social services agencies, which tend to be smaller than other nonprofit organizations. Moreover, the IRS data base includes only those organizations that file a Form 990. Other means must be found to study the finances of nonprofits that do not file tax returns.

Additional research is needed to shed light on the financial position of the U.S. nonprofit sector. However, existing data problems must first be

Table 3. The Types of Nonprofits Identified as Severely at Risk

Organizational Type	*Number of Facilities*
Housing development organization	2
Civic or community organization	1
Medical facility	1
Religious organization	1
Total	5

overcome. Significant segments of the nonprofit sector do not file tax returns with the IRS, which makes it difficult to assess the position of the entire sector. Moreover, the data that are filed are of limited usefulness, because existing tax forms are designed for meeting the compliance requirements of the U.S. Internal Revenue Code and not for encouraging careful studies of the finances of nonprofit organizations. In cooperation with INDEPENDENT SECTOR, the IRS recently made a number of changes that should aid researchers in the future. However, our initial review of the new Form 990 reveals that further changes are needed to improve researchers' ability to study the vulnerability of nonprofits. For example, data on output need to be added to the data base. At a minimum, this information should include clients served, grants made, or other measures of activity. Second, refinements are needed to the revenue category to allow precise identification of sources of revenue. Third, greater efforts are required to audit the Form 990s filed with the IRS, to ensure their reliability. Fourth, a periodic effort is needed to gather data on the finances of charitable nonprofits not currently required to file. Finally, serious attention should be devoted to deriving a methodology for capturing attrition in the nonprofit sector.

The nonprofit sector has been in the shadows for a very long time, and only recently has the interest of the academic community begun to dispel the clouds. Much can be gained if its finances can be scrutinized. As the sector continues to grow, we will need to understand its financial strengths and weaknesses. The approach developed in this article represents a useful step in this direction.

References

Chabotar, K. J. (1989). Financial Ratio Analysis Comes to Nonprofits. *Journal of Higher Education, 60,* 188-208.

Chang, Cyril F., and Howard P. Tuckman. (in press). Vulnerability, Optimality, and Attrition in the Nonprofit Sector. *Annals of Public and Cooperative Economics.*

Cleverley, W. O., and Karen Nilsen. (1980). Assessing Financial Position with Twenty-Nine Key Ratios. *Hospital Financial Management, 34,* 30-36.

Douglas, James. (1987). Political Theories of Nonprofit Organization. In Walter W. Powell (ed.), *The Nonprofit Sector* (pp. 43-54). New Haven, CT: Yale University Press.

Hilgert, C., and S. J. Mahler. (1989). Nonprofit Charitable Organizations, 1985. *Statistics of Income Bulletin, 9,* 53-65.

Hodgkinson, V. A., and M. S. Weitzman. (1989). *Dimensions of the Independent Sector.* Washington, DC: INDEPENDENT SECTOR.

Kanter, R. M., and D. V. Summers. (1987). Doing Well While Doing Good: Dilemmas of Performance Measurement in Nonprofit Organizations and the Need for a Multiple-Constituency Approach. In Walter W. Powell (ed.), *The Nonprofit Sector* (pp. 55-64). New Haven, CT: Yale University Press.

Salamon, L. M., and A. J. Abramson. (1982). *The Federal Budget and the Nonprofit Sector.* Washington, DC: Urban Institute.

Tuckman, Howard P., and Cyril F. Chang. (in press). A Proposal to Redistribute the Cost of Hospital Charity Care. *Milbank Quarterly.*

Weisbrod, B. A. (1988). *The Nonprofit Economy.* Cambridge, MA: Harvard University Press.

Howard P. Tuckman is Distinguished Professor of Economics at Memphis State University. The author of more than ninety refereed articles and seven books, he teaches courses on the economics of nonprofit institutions and MBA economics.

Cyril F. Chang is professor of economics at Memphis State University and adjunct professor of health economics at the University of Tennessee Medical School. He teaches health care economics and has published extensively in health services research.