

Is the Loss of Tax-Exempt Status For Previous Filers Related to Indicators of Financial Distress?

John M. Trussel
University of Tennessee at Chattanooga

The US Congress passed the Pension Protection Act of 2006 (PPA) that automatically revokes the tax-exempt status of any organization that does not file with the IRS for three consecutive years. This study focus on charities that previously filed with the IRS, and it examines whether or not the loss of tax-exempt status is related to indicators of financial distress. The results show that charities that lost their tax-exempt status have smaller equity reserves, higher revenue concentration, lower operating margins, more debt (relative to assets) and are younger and smaller than their counterparts.

INTRODUCTION

The Pension Protection Act of 2006 (PPA) had two very important repercussions for tax-exempt entities. First, the law requires that almost all tax exempt organizations file either a notification of tax exempt status (Form 990N) or an informational return (Form 990 or 990EZ) with the Internal Revenue Service (IRS). Prior to the passage of this law, smaller organizations did not have to file with the IRS. Churches and certain other religious organizations, however, maintain their exclusion from this new filing requirement. Second, if an organization fails to file with the IRS for three consecutive years, then its tax-exempt status will be automatically revoked (IRS 2011a). In June of 2011, the IRS released a list of the first group of tax-exempt organizations that lost their tax exemption under the PPA.

The IRS anticipated that many of the smaller organizations that never filed before the passage of the PPA would still not file due to ignorance of the law or the prohibitive cost of filing. However, some of the larger organizations that previously filed (“previous filers”) also lost their tax-exempt status. For this latter group, the failure to file could be due to financial problems that caused them to cease operations. In other words, their loss of tax exemption may be due to financial distress. The purpose of this study is to determine if the loss of tax exemption by previous filers is related to indicators of financial distress.

If contributions are tax deductible to the donor, then the loss of tax exemption could have a serious impact on the finances of the organizations. Donors would likely seek other avenues for their contribution funds. Financial distress would likely have an impact on donations, too. Parsons and Trussel (2007), for example, find that indicators of financial distress provide donors with incremental information beyond that contained in efficiency ratios alone. The loss of tax exemption has even more important implications to those organizations in which contributions are deductible by the donor; thus, I focus on public charities (“charities”), since donations to most charities are tax deductible. Also, charities are the largest sub-sector of tax exempt organizations.

In this study, I use indicators of financial distress based on previous studies to determine if there is a relationship between the loss of tax exemption and these indicators. I hypothesize that charities that are

previous filers and that lost their tax-exempt status will have smaller equity reserves, higher revenue concentration, lower operating margins, more debt (relative to assets) and will be younger and smaller than their counterparts that did not lose their tax-exempt status. Using logistic regression on a sample of previous filers, these hypothesized relationships are confirmed. The results indicate that the loss of tax exemption is related to indicators of financial distress.

I also use the logistic regression model to determine the likelihood of tax exemption revocation. The model can correctly predict up to 98 percent of the charities as having their exemption status revoked or not. The regression model also allows for the determination of the impact of each indicator on the likelihood of tax exemption revocation. The financial indicator with the biggest influence on the risk of exemption revocation is revenue concentration. Donors, creditors, regulators and other stakeholders can use the model to predict whether or not a charity will have its tax exemption revoked, which will aid in donation and credit decisions. Managers and board members of charities can use the results to detect and mitigate financial distress that could lead to a revocation of tax exemption.

The paper is organized as follows: Section 2 provides background on the tax-exempt sector and how the PPA impacts this sector. Section 3 discusses the financial indicators used in the model. Section 4 includes a discussion of the results of empirical tests of the model, and Section 5 concludes the paper.

BACKGROUND ON THE TAX-EXEMPT SECTOR

Organizations that meet the requirements of Internal Revenue Code (IRC) Section 501(a) are exempt from federal income taxation. The size of the tax-exempt sector is immense. According to the National Center for Charitable Statistics (NCCS), there are over 1.6 million organizations that meet the requirements of IRC Section 501(a) (“tax-exempt organizations”) and are registered with the IRS. Of those registered, 70 percent filed informational returns with the IRS in 2009, reporting total revenues of over \$1.7 trillion (NCCS 2011).

The vast majority (1,162,634 or 72 percent) of the tax-exempt organizations meet the requirements of IRC Section 501(c)(3), which include public charities (“charities”) (1,046,719 or 90 percent of this sub-sector) and private foundations (115,915 or 10 percent of this sub-sector). The remainder of the tax-exempt organizations (454,667 or 28 percent) is tax-exempt under other IRC 501 sections, such as social welfare organizations under Section 501 (c)(4), agricultural and horticultural organizations under Section 501 (c)(5), labor organizations and trade associations under Section 501 (c)(6), and social clubs under Section 501 (c)(7).

Under federal and state laws, organizations qualifying under IRC Section 501(c)(3) receive several types of tax benefits. Most of these organizations are eligible for exemption from federal corporate income tax and may accept tax-deductible contributions. State laws typically offer tax benefits such as exemption from sales, property and income taxes. However, the cost of maintaining the tax-exempt status is very high, especially for smaller organizations. Such costs include accounting, training, legal and filing fees, among others (Blumenthal and Kalambokidis 2006).

Charitable contributions made to most IRC Section 501(c)(3) organizations by individuals and corporations are deductible under IRC Section 170. In 2009, public charities and private foundations received nearly \$304 billion in donations, which represents over 20 percent of the total revenues for these organizations (Giving USA 2011). Thus, the loss of the federal tax exemption would likely impact the donations to these organizations dramatically.

In 2006, the United States Congress passed the Pension Protection Act (PPA), which requires that most tax-exempt organizations file an annual information return or notice with the IRS. For small organizations, the law imposed a filing requirement for the first time in 2007. In addition, the law automatically revokes the tax-exempt status of any organization that does not file required returns or notices for three consecutive years. Automatic revocation occurs when an exempt organization that is required to file an annual return (for example, Form 990, 990-EZ or 990-PF) or submit an annual electronic notice (Form 990-N or “e-Postcard”) does not do so for three consecutive years (IRS 2011a).

Prior to the passage of this law, a tax-exempt organization (other than a private foundation) that normally has annual gross receipts of \$25,000 or less was not required to file. Beginning with tax years that end on or after December 31, 2007, these smaller tax-exempt organizations must provide either an annual electronic notice (Form 990-N) or an annual information return (Form 990 or Form 990 EZ). Exceptions to the filing requirement include organizations that are included in a group return, as well as churches, their integrated auxiliaries, conventions or associations of churches, and some other religious organizations. (Private foundations of any size have always been required to file Form 990 PF). This new requirement impacted over 400,000 registered tax-exempt organizations that previously were not required to file but now must file. This paper does not focus on these organizations that were required to file for the first time; rather, the focus is on those charities that previously filed but subsequently lost their tax-exempt status due to failure to file for three consecutive years.

An automatic revocation of tax exemption (“exemption revocation”) is effective on the original filing due date of the third annual return or notice. On June 8, 2011, the IRS published the initial list of organizations whose tax-exempt status was automatically revoked because of failure to file a required Form 990, 990-EZ, 990-PF or Form 990-N for three consecutive years (2007-2009). There were 279,599 organizations on this initial list. Of those, 176,959 (63 percent) were public charities or private foundations under IRC Section 501(c)(3), which is below the proportion in the total population of tax-exempt organizations (that is, 72 percent of the total are public charities or private foundations).

The primary issue in this paper is the financial condition of organizations that previously filed but then lost their tax-exempt status due to failure to subsequently file. The research question is whether or not financial distress contributed to the loss of tax exemption by charities that filed previous to the PPA. This paper focuses on charities in particular for two reasons. First, as previously noted, contributions made to charities are deductible under IRC section 170. Second, charities represent the largest proportion of organizations (64 percent) relative to the total tax-exempt sector. Charities represent diverse missions that include those related to arts, education, health, human services, religion and others.

INDICATORS OF FINANCIAL DISTRESS IN CHARITIES

This paper addresses whether or not the recent exemption revocation by many charities is related to indicators of financial distress. Financial distress is a condition in which an organization is experiencing financial problems that could lead to a variety of undesirable consequences including reducing or eliminating programs, eliminating workforce, missing debt service, or, ultimately, ceasing to exist. Operationalizing the state of financial distress is difficult, and researchers have used a variety of constructs. Tuckman and Chang (1991), for example, define an organization as “at risk” of financial distress if it is in the bottom quartile using one of four indicators. Greenlee and Trussel (2000) define a public charity as financially distressed if it reduces its program expenses (scaled by total expenses) for three consecutive years. Trussel (2002) and Trussel and Greenlee (2004) classify a public charity as financially distressed if its fund balance declines by more than 20 percent or 50 percent. Hager (2001) defines an arts organization as “dead” if it fails to file a return for three consecutive years using IRS databases. Although Hager’s construct is similar to the IRS definition for automatic revocation of tax-exempt status, he was not able to know for sure if the organization lost its tax exemption due to the limitations of the database that he utilized.

All of the prior research uses indicators of financial distress to determine if there is a relationship between the indicators and the state of financial distress. The indicators are typically financial ratios from the year prior to entering the state of financial distress. In this study, I use a similar methodology with indicators based on the extant literature. I develop a model that uses indicators to proxy the determinants of financial distress. Tuckman and Chang (1991) argue that a charity is vulnerable to financial distress if it has a relatively low equity reserve, high revenue concentration, low administrative costs, or a low operating margin. Greenlee and Trussel (2000) Hager (2001), and Trussel and Greenlee (2004) utilize similar constructs, as well. These indicators are discussed below based on Trussel (2002).

The Indicators

Equity Reserve (EQUITY)

Equity, the fund balance, can be considered a reserve available to offset a reduction of revenues. Equity can also be used as collateral for borrowing funds from capital markets or other creditors. Defined as the fund balance divided by total revenues, the equity reserve can be interpreted as the number of years that the organization can operate with no additional revenues. Charities with a small reserve of equity (relative to revenues) are more likely to have difficulties when faced with a financial shock. I hypothesize that organizations with lower equity reserves will have a higher likelihood of exemption revocation. Thus, I predict a negative relationship between EQUITY and exemption revocation.

Revenue Concentration (CONCEN)

Charities receive funds from several sources such as grants, donations, gifts, program services, membership dues, and investments. Charities with few sources of revenues are likely to be vulnerable to financial shock because they cannot rely on alternatives. To avoid cutting program services when financially distressed, charities need to develop multiple sources of revenues. I compute the revenue concentration index by taking each revenue source as a percentage of total revenues, squaring this percentage and then summing these values. By construction, the index equals one if a charity earns all of its revenue from one source and approaches zero for a charity with multiple sources of revenues. This index does not measure the concentration *within* a source of revenue, such as one large donor versus several small ones. It measures the concentration *among* the types of revenues, such as donations versus membership dues. I predict a positive relationship between CONCEN and the likelihood of exemption revocation.

Administrative Costs

An alternative for charities facing financial difficulties is to reduce administrative expenses. Tuckman and Chang (1991) suggest that charities with high administrative costs (relative to total expenses) are less likely to be financially distressed. The ratio of administrative expenses to total expenses is essentially a measure of organizational slack, since these charities have more opportunity to cut discretionary administrative costs without having an impact on program services. Some studies, such as Tinkelman (1999), Trussel (2003), Krishnan, et al. (2006) and Jones and Roberts (2006) suggest that certain administrative and fundraising expenses are systematically understated due to the incentive to overstate program expenses. Following Trussel (2002), I omit this variable from the study. This omission is reasonable in light of previous studies that indicate that this variable is likely to be systematically misstated. Also, results from previous studies, such as Greenlee and Trussel (2000) and Trussel and Greenlee (2004), are mixed concerning this variable as an indicator of financial distress.

Operating Margin (MARGIN)

Operating margin is the excess of total revenues over total expenses as a percentage of total revenues. A negative operating margin means that the charity must reduce its fund balance to cover the deficit. Charities are not in business to generate profits; however, charities with low or negative operating margins are more likely to deplete their equity over time and are less likely to survive. Thus, I predict a negative relationship between MARGIN and the likelihood of exemption revocation.

In addition to the variables identified by Tuckman and Chang (1991), I examine additional variables from other studies of charities— debt usage (Trussel 2002), age (Tinkelman 1999), and size (Trussel and Greenlee 2004).

Debt Ratio (DEBT)

An organization that relies heavily on debt to finance its operations is more susceptible to financial problems than an organization that relies less on debt. The use of debt requires servicing even when an organization faces financial difficulties. Further, during a period of financial problems, it is less likely that a charity can raise capital from banks or capital markets to fund its programs. Following Trussel (2002), I

predict a positive relationship between DEBT, measured as the ratio of total liabilities to total assets, and exemption revocation.

Age of the Organization (AGE)

The age of an organization is typically related to the reputation and ability to survive alternative business cycles (Tinkelman 1999). Older charities are more likely to survive, and I predict a negative relation between AGE and exemption revocation. I measure age as the difference between the current year and the ruling date. The ruling date is the year in which the charity received its tax-exempt status. The year in which the charity began operations is not readily available.

Size of the Organization (SIZE)

Trussel and Greenlee (2004) find that larger charities are less vulnerable to financial distress. Factors such as economies of scale related to costs are normally correlated with size (Ohlson 1980; Tinkelman 1999). Thus, larger charities are more likely to survive, and I predict a negative relation between SIZE and exemption revocation. I use the natural log of total assets as a measure of SIZE.

In summary, I hypothesize that the revocation of tax exemption status (“exemption revocation”) is related to certain indicators of financial distress. I predict that the likelihood of exemption revocation is directly related to a charity's revenue concentration and debt ratio. Also, I hypothesize that the likelihood of exemption revocation is inversely related to a charity's equity reserve, operating margin, age and size. The variables are summarized in Table 1 along with their expected impact on the likelihood of exemption revocation.

I also control for the sector of the charity. I divide the sample into five major sectors, as determined by the National Taxonomy of Exempt Entities’ (NTEE). These sectors are Arts, Education, Healthcare, Human Services, and Other (the reference sector for the regressions).

**TABLE 1
INDICATORS OF FINANCIAL DISTRESS**

Indicator	Measure	Expected Relationship with Loss of Tax Exemption
Equity reserve (EQUITY)	$\frac{\text{Total Equity}}{\text{Total Revenue}}$	-
Revenue concentration (CONCEN)	$\sum \left(\frac{\text{Revenue}_j}{\text{Total revenues}} \right)^2$	+
Operating margin (MARGIN)	$\frac{\text{Total Revenues} - \text{Total Expenses}}{\text{Total Revenues}}$	-
Debt ratio (DEBT)	$\frac{\text{Total Liabilities}}{\text{Total Assets}}$	+
5. Age of organization (AGE)	Current Year – Ruling Date	-
6. Size of organization (SIZE)	ln (Total Assets)	-
7. Sector (SECTOR)	NTEE Five Major Sector Code	?

Note: All variables are measured from the 2006 tax year. Subscripts are dropped for ease of presentation. The sectors are Arts, Education, Healthcare, Human Services, and Other (the reference sector for the regressions).

THE RESULTS OF TESTING THE EXEMPTION REVOCATION MODEL

This study focuses on the indicators of financial distress related to exemption revocation. Certain financial distress indicators are hypothesized to be related to exemption revocation and are described in the previous section and are summarized in Table 1. This section presents the sample criteria and the empirical tests of the exemption revocation model.

Sample Selection and Descriptive Statistics

On June 8, 2011, the IRS reported that there were 279,599 organizations that failed to file their notices or returns for the years 2007-2009. These organizations received an automatic revocation of tax exemption from the IRS. Of these 176,959 organizations were charities or private foundations. The IRS suggests that a large number of these are smaller organizations were never required to file before the passage of the PPA in 2006 (IRS 2011a). I focus on charities that filed in 2006 (“previous filers”) and were on the list of those that received automatic revocation of their tax-exempt status due to failing to file for the tax years 2007-2009. The number of charities that filed a return prior to the passage of the PPA is a small subset of the total number of those received automatic revocations. As previously noted, this is due to the new reporting requirements under the PPA for smaller organizations. I omit those that did not previously file, since I cannot ascertain whether they did not file due to ignorance of the law or some other reason.

I obtain the sample of charities from the IRS Core database developed by the National Center for Charitable Statistics (NCCS) for the tax year 2006. This database includes all charities that filed a 2006 Form 990 return with the IRS. Using the filing requirements prior to the passage of the PPA, smaller charities (those with gross receipts normally less than \$25,000) and certain religious organizations were not required to file. As previously stated, charities are those organizations that are tax-exempt under Internal Revenue Code Section 501(c)(3) and represent approximately 64 percent of all tax-exempt organizations. The IRS Core database is biased toward larger charities, which will limit the ability to generalize the results to very small or religious-based charities.

There are 303,077 charities on the 2006 Core Files database, and 7,571 of those are also included on the IRS list of those that received automatic revocation of tax exemption. To remain in the sample for testing, the charities must have all of the data available to compute the independent variables and must not be an outlier. SIZE is the natural log of total revenues with a lower bound of zero and no upper bound. I find no outliers with this indicator based on a variety of techniques, including an examination of data in each percentile. Using percentiles for the other continuous variables, I find that those in the 99th percentile appear to be outliers due to their extreme distance from the 99th percentile cutoff and are thus truncated. Winsorizing the data at the 99th percentile (results not shown) does not alter the result significantly. The final sample includes 269,250 charities. There are 5,927 charities in the sample (2.2 percent) that are on the initial list of tax-exempt organizations that received automatic revocation of their tax exemption published by the IRS on June 8, 2011 (“revoked” status). The remaining charities in the sample did not receive an automatic revocation of their tax exemption (“not revoked” status). The sample is summarized by status (revoked or not revoked) and sector in Table 2.

TABLE 2
THE SAMPLE AND SAMPLE PARTITIONS

Panel A: The Sample

	<u>Charities</u>	
	Count	Percent
Total charities on NCCS Core database	303,077	100.0%
Outliers ^a	4,728	1.6%
Data not available for all variables	<u>29,099</u>	<u>9.6%</u>
Final sample of charities	269,250	88.8%

Panel B: The Sample Partitioned by Sector and Status

Sector	<u>Status</u>		Total	Percent Revoked
	Not Revoked	Revoked ^b		
ARTS	28,618	562	29,180	1.9%
EDUCATION	49,004	654	49,658	1.3%
HEALTH	33,569	664	34,233	1.9%
HUMAN SERVICES	90,770	2,415	93,185	2.6%
OTHER	<u>61,362</u>	<u>1,632</u>	<u>62,994</u>	<u>2.6%</u>
Total	263,323	5,927	269,250	2.2%

^aOutliers are defined as those charities with an independent variable (except SIZE) (from Table 1) in the extreme 99th percentile.

^bRevoked charities represent the number of charities in the sample that had their tax-exempt status revoked by the IRS after not filing for the years 2007-2009.

Summary statistics for the sample of charities partitioned by revocation status are included in Table 3. I hypothesize that the likelihood of exemption revocation is a direct function of CONCEN and DEBT and an inverse function of EQUITY, MARGIN, AGE and SIZE. As presented in Panel A of Table 3, all of the variables are statistically significant at less than the 0.01 level, according to the *t*-statistic. Also, all of the signs are as anticipated.

Panel B of Table 3 displays the Pearson correlation coefficients between pairs of the independent variables. Although the correlations are statistically significant, there does not seem to be a problem with multicollinearity in the regressions. The highest correlation is 0.304 between AGE and SIZE.

TABLE 3
DESCRIPTIVE STATISTICS

Panel A: Descriptive Statistics

Indicator	Status	Mean	Std. Deviation	t-statistic
EQUITY	Not Revoked	1.8681	3.717	38.061***
	Revoked	0.7855	2.118	
CONCEN	Not Revoked	0.7745	0.213	-26.267***
	Revoked	0.8449	0.204	
MARGIN	Not Revoked	0.0657	0.325	11.901***
	Revoked	0.0082	0.368	
DEBT	Not Revoked	0.2359	0.450	-8.399***
	Revoked	0.3061	0.640	
AGE	Not Revoked	18.2512	15.241	65.831***
	Revoked	9.4512	10.034	
SIZE	Not Revoked	12.1515	2.623	60.605***
	Revoked	9.9285	2.796	

***. Significant at the 0.01 level (one-tailed).

Panel B: Pearson Correlation Coefficients (Significance)

Indicator	EQUITY	CONCEN	MARGIN	DEBT	AGE
CONCEN	-0.057*** (0.001)				
MARGIN	0.055*** (0.001)	0.022*** (0.001)			
DEBT	-0.207*** (0.001)	0.074*** (0.001)	-0.136*** (0.001)		
AGE	0.084*** (0.001)	-0.165*** (0.001)	-0.055*** (0.001)	-0.020*** (0.001)	
SIZE	0.290*** (0.001)	-0.081*** (0.001)	0.098*** (0.001)	0.140*** (0.001)	0.304*** (0.001)

***. Significant at the 0.01 level (two-tailed).

The Multivariate Model

Since the dependent variable is categorical, tax exemption revoked or not revoked, the significance of the multivariate model is addressed using logistic regression analysis. The underlying latent dependent

variable is the probability of exemption revocation for charity i , which is related to the observed variable, $Status_i$, through the relation:

$Status_i = 0$ if the organization's tax exemption was not revoked,
 $Status_i = 1$ if the organization's tax exemption was revoked.

The model includes all of the independent variables from Table 1. The predicted probability of the k^{th} status for charity i , $P(Status_{ik})$ is calculated as:

$$P(Status_{ik}) = \frac{1}{1 + e^{-Z}} \quad (1)$$

where

$$Z_i = \alpha + \beta_1 EQUITY^+ + \beta_2 CONCEN^+ + \beta_3 MARGIN^- + \beta_4 DEBT^+ + \beta_5 AGE^+ + \beta_6 SIZE^- + \beta_7 SECTOR^?$$

I use a random sample of approximately one-half of the charities to develop the model (the estimation sample) and the other half to test the model (the holdout sample). The results of the logistic regression model are included in Table 4. Overall, the model is statistically significant, using the chi-square statistic, which means that the model fits the data well. All of the independent variables are significantly related to the probability of exemption revocation (at the 0.05 level) with the predicted signs. These results show that the loss of tax-exemption status is related to the indicators of financial distress for charities that filed with the IRS in 2006.

TABLE 4
RESULTS OF THE MULTIVARIATE MODEL OF EXEMPTION REVOCATION

$$P(Status_{ik}) = \frac{1}{1 + e^{-Z}}$$

$$Z_i = \alpha + \beta_1 EQUITY^+ + \beta_2 CONCEN^+ + \beta_3 MARGIN^- + \beta_4 DEBT^+ + \beta_5 AGE^+ + \beta_6 SIZE^- + \beta_7 SECTOR^?$$

Variable	Exp(B):					
	B	S.E.	Wald	Sig.	Odds Ratio	Impact
Constant	-1.662	0.114	213.678	0.001	0.190	
EQUITY	-0.032	0.009	12.590	0.001	0.968	-0.003
CONCEN	0.887	0.097	82.809	0.001	2.427	0.093
MARGIN	-0.364	0.058	40.029	0.001	0.695	-0.036
DEBT	0.237	0.031	60.119	0.001	1.268	0.024
AGE	-0.045	0.002	458.758	0.001	0.956	
SIZE	-0.198	0.006	1,085.827	0.001	0.820	-0.020
SECTOR _(ARTS)	-0.179	0.072	6.118	0.013	0.836	
SECTOR _(EDUCATION)	-0.498	0.066	56.681	0.001	0.608	
SECTOR _(HEALTH)	0.021	0.067	.098	0.754	1.021	
SECTOR _(HUMAN SERVICES)	0.056	0.047	1.387	0.239	1.057	

Notes: The model chi-square is 2,752.561 and is significant at the 0.01 level. The Nagelkerke R^2 is 0.107. $Exp(B)$ represents the odds ratio, the change in the odds of exemption revocation due to a one unit change in the covariate. For ratios, a one-unit change is not plausible. Thus, for the continuous variables except AGE, the impact column represents the impact on the odds of exemption revocation due to a 0.10 increase in the variable. The impact is computed as $Exp(B)^{0.10} - 1$. For the AGE variable, a one-unit change is an increase in the age of the organization. For the SECTOR variables, the odds ratio represents the impact on the odds of revocation due to belonging to the particular sector relative to the "Other" sector (the reference sector).

The results of the regression analysis also allow one to address the impact of a change in an indicator of financial distress on the likelihood of exemption revocation. In Table 5, $Exp(B)$ is the odds ratio, which is the change in the odds of the event (exemption revocation) occurring for a one-unit change in the indicator. For the continuous variables except AGE, the last column in Table 4 represents the impact on the likelihood of exemption revocation due to a 0.10 increase in the value of the indicator, since a one-unit change is not reasonable for these variables. The impact is computed as $Exp(B)^{0.10} - 1$. Revenue concentration (CONCEN) has the biggest influence on the likelihood of exemption revocation. An increase in CONCEN of 0.10 increases the predicted likelihood of exemption revocation by 0.093. Based on the indicators in this model, charities attempting to reduce the likelihood of exemption revocation will have the greatest impact by decreasing CONCEN, meaning a diversification of their revenue streams will have the largest impact. Changes in the other indicators do not have nearly the same impact on the likelihood of exemption revocation. For the AGE variable, a one-unit change is an increase in the age of the organization. For the categorical variable, SECTOR_j, the last column represents the impact on the predicted likelihood of exemption revocation due to membership in a particular sector relative to belonging to the “Other” sector. For example, charities in the education sector reduce the odds of revocation by 0.392 compared to charities in the “Other” sector. Of course, sector membership is not controllable other than at inception of the organization.

Predicting Exemption Revocation

I use the results of the logistic regression analysis to test the predictive ability of the exemption revocation model. The predicted dependent variable, $P(i,t)$: the probability of exemption revocation for charity i , is computed using the actual indicators for each charity in the estimation sample. The resulting probabilities are used to classify charities as revoked or not. Jones (1987) suggests adjusting the cutoff probability for classifying as revoked or not revoked in two ways. Following the suggestion of Jones (1987) and Trussel (2002), I first incorporate the prior probability of exemption revocation and then include the expected cost of misclassification.

Using logit, the proportion of revoked charities in the sample must be the same as the proportion in the population to account for the prior probability of revocation. If the proportion is not the same, then the constant must be adjusted (Maddala, 1991). This is more of a problem when a paired sample method is used, which is not the case here. Since I do not know the proportion of revoked entities in the population of all charities, I assume that the proportion of charities with a revoked status in the sample (2.2 percent) is an unbiased estimator of the proportion in the population of all charities. Since 2.2 percent of the charities in the sample have a revoked status, I assume that the prior probability of exemption revocation is 0.022. I evaluated the sensitivity of the model to other assumptions of the prior probability of revocation by using prior probabilities of 0.01, 0.05 and 0.10. These assumptions did not alter the results significantly.

The ratios of the cost of Type I errors (incorrectly classifying revoked charities as not revoked) to Type II errors (incorrectly classifying charities that are not revoked as revoked) also must be determined. The particular cost function is difficult to ascertain and will depend on the user of the information. For example, a creditor wants to minimize loan losses (and thus Type I errors); however, he or she will suffer an opportunity cost (Type II error) if credit is granted to another borrower at a lower rate. In most cases, the cost of a Type II error is likely to be much smaller than a Type I error. Thus, I incorporate several relative cost ratios (and cutoff probabilities) into my analysis, allowing the cost of Type I error to be as much as 100 times the cost of a Type II error. Specifically, I include the relative costs of Type I to Type II errors of 1:1, 10:1, 20:1, 30:1, 40:1, 60:1, and 100:1 (Beneish, 1999; Trussel, 2002).

The results of using the logit model to classify charities as revoked or not are included in Table 5, Panel A, for the estimation sample and Panel B for the holdout sample. The cutoff probabilities presented are those that minimize the expected cost of misclassification. Following Beneish (1999), the expected cost of misclassification (ECM) is computed as:

$$ECM = P(FD)P_I C_I + [1 - P(FD)]P_{II} C_{II}.$$

P(FD) is the prior probability of revocation; P_I and P_{II} are the conditional probabilities of Type I and Type II errors, respectively; and C_I and C_{II} are the costs of Type I and Type II errors, respectively. The results indicate that the model can identify revoked charities with 43 percent (at a cost ratio of 100:1) to 98 percent (at a cost ratio of 1:1) of the charities in the estimation sample correctly classified. The overall predictive ability is very high with the lower cost ratios, but the Type I error rate is high at these levels. As the cost ratio increases the Type I error rate decreases, but the Type II error rate increases due to the large proportion in the sample of those that did not have their tax exemptions revoked. The validity of the model is tested on the holdout sample using the same cutoff probabilities from the estimation sample. In the holdout sample, the results are very similar to the estimation sample.

TABLE 5
THE PREDICTIVE ABILITY OF THE EXEMPTION REVOCATION MODEL

Panel A: Estimation Sample

	The Ratio of the Cost of Type I to Type II Misclassification						
	1	10	20	30	40	60	100
Cutoff	0.310	0.065	0.042	0.033	0.024	0.019	0.012
Type I Error	0.997	0.810	0.577	0.440	0.294	0.201	0.098
Type II Error	0.001	0.036	0.111	0.182	0.299	0.394	0.576
Overall Error	0.022	0.052	0.121	0.188	0.299	0.390	0.566
ECM Model	0.022	0.213	0.362	0.469	0.551	0.651	0.779
ECM Naïve	0.022	0.220	0.440	0.660	0.880	0.978	0.978
Relative Costs	1.021	0.968	0.823	0.710	0.626	0.666	0.796
Overall Correct	0.978	0.948	0.879	0.812	0.701	0.610	0.434

Panel B: Holdout Sample

	The Ratio of the Cost of Type I to Type II Misclassification						
	1	10	20	30	40	60	100
Cutoff	0.310	0.065	0.042	0.033	0.024	0.019	0.012
Type I Error	0.996	0.813	0.587	0.449	0.278	0.198	0.094
Type II Error	0.000	0.035	0.111	0.182	0.300	0.396	0.581
Overall Error	0.023	0.053	0.121	0.187	0.298	0.389	0.567
ECM Model	0.022	0.214	0.367	0.474	0.538	0.649	0.776
ECM Naïve	0.022	0.220	0.440	0.660	0.880	0.978	0.978
Relative Costs	1.018	0.971	0.833	0.719	0.612	0.664	0.793
Overall Correct	0.977	0.947	0.879	0.813	0.702	0.611	0.433

Note: The cutoff is the probability of fiscal distress that minimizes the expected cost of misclassification, ECM. ECM is computed as $ECM = P(FD)P_I C_I + [1 - P(FD)]P_{II} C_{II}$, where P(FD) is the prior probability of fiscal distress (0.022), P_I and P_{II} are the conditional probabilities of Type I and Type II errors, respectively. C_I and C_{II} are the costs of Type I and Type II errors, respectively. The relative costs are the ECM Model divided by the ECM Naïve.

To test the usefulness of the model, I compare these results to a naïve strategy. This strategy classifies all charities as revoked (not revoked) when the ratio of relative costs is greater than (less than or equal to) the prior probability of revocation. This switch in strategy between classifying all organizations as not fiscally distressed to classifying all of them as fiscally distressed occurs at relative cost ratios of 45:1 (1 / 0.022). If all charities are classified as revoked (not revoked), then the naïve strategy makes no Type I (Type II) errors. In this case, P_I (P_{II}) is zero, and P_{II} (P_I) is one. The expected cost of misclassification for the naïve strategy of classifying all charities as not revoked (revoked) reduces to $0.978C_{II}$ ($0.022C_I$).

I also report the relative costs or the ratio of the ECM for the model to the ECM for the naïve strategy in both panels of Table 5. Relative costs below 1.0 indicate a cost-effective model. For both the estimation and holdout samples, my model has a lower ECM than the naïve strategy all cost ratios above 1:1. These results provide evidence to suggest that the exemption revocation model is cost-effective in relation to a naïve strategy for the all ranges of the ratio of Type I and Type II errors except 1:1. It is very unlikely that the cost of Type I errors would be the same as the cost of Type II errors. Table 6 shows an example of how to apply the model.

TABLE 6
APPLYING THE PREDICTION MODEL

$$P(i,t) = 1/(1+e^{-Z_i})$$

where:

$$Z_i = -1.662 - 0.032 \text{ EQUITY} + 0.887 \text{ CONCEN} - 0.364 \text{ MARGIN} + 0.237 \text{ DEBT} - 0.045 \text{ AGE} - 0.198 \text{ SIZE} + \beta_7 \text{ SECTOR}$$

Indicator	Model Parameter (Table 4)	Example (Actual Data)	Result (Parameter x Data)
Constant	-1.662	N/A	-1.662
EQUITY	-0.032	1.442	-0.046
CONCEN	0.887	0.519	0.460
MARGIN	-0.364	0.032	-0.012
DEBT	0.237	0.044	0.010
AGE	-0.045	36	-1.620
SIZE	-0.198	13.881	-2.748
SECTOR	-0.179	Arts	<u>-0.179</u>
Sum (Z)			-5.796
$P = 1 / (1+e^{5.796})$			0.003

Note: I use a sample charity from the Arts sector to illustrate the model. The model allows one to predict the status of the charity as revoked or not revoked. Table 5, Panel A, shows that the selected charity is predicted not to be revoked for all cost ratios, since the predicted probability of exemption revocation (0.003) is less than the cutoff at all levels of the ratio of Type I to Type II errors. The entity's actual status is not revoked; thus, the model correctly predicted the exemption revocation status of this charity.

CONCLUSION

The PPA of 2006 has serious consequences for tax exempt organizations. The new filing requirements for smaller organizations and the potential for automatic revocation of tax-exempt status have dramatically impacted thousands of organizations. This paper suggests that for charities that filed with the IRS prior to the passage of the PPA, the revocation of tax exemption is related to indicators of

financial distress. Specifically, those previous filers that lost their tax exemptions have smaller equity reserves, higher revenue concentration, lower operating margins, more debt (relative to assets) and are younger and smaller than their counterparts that did not lose their tax exemptions. This exemption revocation model correctly predicts up to 98 percent of the charities as having their exemptions status either revoked or not revoked.

The results of this paper contribute the growing literature on financial distress in charities (for example, Trussel and Greenlee 2004). This study measures the state of financial distress as the revocation of tax exemption. Previous studies use reductions in program expenditures or fund balances to measure this state. There are limitations to the application of the model, however. The sample used to develop the model only includes charities that previously filed with the IRS before the enactment of the PPA and only includes a brief time period. Future research could expand the results to smaller organizations, to different types of tax exempt organizations other than charities, and to different time periods.

The results also have important implications for decision-makers. Donors, creditors, regulators and other stakeholders can use the model to predict whether or not a charity will have its tax exemption revoked, which will aid in donation and credit decisions. Managers and board members of charities can use the results to detect and mitigate financial distress that could lead to a revocation of tax exemption.

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