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Competition, Contractibility, and the Market for Donors to Nonprofits

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This article investigates theoretically and empirically the effects of competition for donors on the behavior of nonprofit organizations. Theoretically, we consider a situation in which nonprofit organizations use donations to produce some commodity, but the use of donations is only partially contractible. The main results of the model indicate that an increase in competition (i) decreases the fraction of donations allocated to perquisite consumption and (ii) increases the fraction of donations allocated to promotional expenditures. Moreover, the effects of competition are magnified by the ability to contract on the use of donations. These hypotheses are tested with data on the expenditures of nonprofit organizations in a number of subsectors where competition is primarily local. We use across–metropolitan statistical areas' variation to measure differences in competition and proxy contractibility by the importance of tangible assets, which are more easily observed by donors. The estimated effects of competition and contractibility are consistent with our model.

1. Introduction

Nonprofit firms differ from their for-profit counterparts in several ways. Perhaps the most critical distinction is the nondistribution constraint, prohibiting disbursement of the profits of the enterprise. Also, Glaeser (2002) notes the

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striking absence among nonprofits of the usual institutions and practices that provide incentives to managers of for-profit firms such as stock-based incentive pay, powerful shareholders, and takeover threats. Glaeser speculates that competition among nonprofit firms is an important force that serves to keep nonprofits reasonably well governed.

This article takes up the issue of competition among nonprofits for donors. We examine how competition affects perquisite consumption, promotional expenses, and the delivery of goods and services that donors are contributing to. In addition, we examine the role of the inability to write complete contracts regarding the provision of goods and services and its interplay with competition. We consider these issues both theoretically and empirically.[1] In our model, nonprofit firms compete for donors in two ways, roughly corresponding to "price" and "nonprice" competition. The first is regarding the "implicit price" of donations. Though managers of nonprofit firms cannot take profits in cash, they are able to consume some of the residual income of the firm in kind. Because donors value the charitable provision of the good (by assumption), the implicit price of donating a dollar increases with the fraction of donations taken out and not devoted to program goods and services. We examine the effect of the number of competitors on the fraction of firm donations taken as in-kind perquisite consumption, thus affecting the implicit price of donations.

The second form of competition is in the provision of information, services, and promotion to donors. We assume that donors gain utility from more information about the organizational "cause" and from services to donors such as access to management, tours of facilities, and free banquets. Competition in this form, however, raises the nonprogram expenses of the nonprofit. We examine how this is affected by increased competition among a larger number of firms.

Which of these forms of competition dominates is important in determining how greater competition affects the delivery of program goods and services. The ability to contract on the provision of program goods and services is crucial in this regard. The ability to contract on the provision of the good or service enables the firm to credibly lower its implicit price, thereby attracting donors. Absent this ability, the competition is only in the form of promotional expenses, which do not improve the provision of the good or service. Altruism of the manager plays a role here. If the nonprofit manager is altruistic, donors rely on this motivation to direct donations to program services. Interestingly, these findings regarding the effects of competition among nonprofits relate closely to the literature on the existence of the nonprofit form of organization. Glaeser and Shleifer (2001) point to the (in) ability to contract on quality as key in determining whether a firm becomes nonprofit or for-profit.[2]

1. Though the importance of the ability to write complete contracts has long been recognized in the contracting and game theory literatures, very little empirical work has been done in this regard. Two recent exceptions are Crocker and Moran (2003) and Hendel and Lizzeri (2003), who empirically examine the issue of contractibility in dynamic insurance contracts.

2. Hansmann (1996) has a closely related analysis. Also, see Fama and Jensen (1983). Weisbrod (1977, 1980) presents another theory of the nonprofit sector where nonprofit firms substitute for government in the provision of public goods.

Though the nonprofit sector of the US economy is substantial, accounting for 7% of national income, 6% of employment, and dominating in sectors such as social services, education, and health care,[3] little attention has been paid to competition and the operation of markets in this sector. There is a substantial literature on donor response to the implicit price of donations, fundraising activity, and to the marginal tax rate.[4] Another related aspect of the literature considers the motivation to donate to charitable causes when free riding is present and the problem of crowding out of private contributions by public funding.[5]

It has long been argued that the lack of a profit motive alters behavior and induces excessive perquisite consumption expenditures by managers of nonprofit institutions.[6] Newhouse (1970) considers this in more detail in the context of the hospital industry. In an article that is the most closely related to our empirical work, Feigenbaum (1987) estimates how expenditures by medical charities depend on market power as measured by the four-firm concentration ratio (CR4). Rose-Ackerman (1982) develops a model that examines fundraising by charities and how competition may induce excessive expenditure on promotional expenses. In a model tangentially related to ours, Bilodeau and Slivinsky (1997) consider how rival charities allocate donations to various bundles of public goods and may end up in specializing in one public good.[7] Our article is unique in several respects, incorporating in a single model both price and nonprice effects on donor behavior, competition among nonprofit firms, and the role of contractibility and altruism and also providing empirical work with a large and broad-based sample of nonprofit firms.

This article is organized as follows. Section 2 describes the model. We consider a situation where a nonprofit firm produces a good with two inputs. One input is observable to donors and so it is possible to contract on a specified share of donations to this input. The other input is unobservable to donors and is not possible to contract on. The more important the contractible input is to production, the closer the nonprofit comes to committing donations to a specified output. Donors value the output (consumed by others) and promotional services. Thus, we incorporate competition in the form of promotional expenses and in the efficient provision of the good.

3. See Independent Sector (2001).

4. See Okten and Weisbrod (2000) for a recent study of the effects of the implicit price and fundraising on donations and Reece (1979) and Auten et al. (1992) on the effects of changes in marginal tax rates.

5. See Bergstrom et al. (1986) and Andreoni (1990, 1988) on altruistic giving; Andreoni and Petrie (2004) on social effects to reduce free riding; and Kingma (1989), Payne (1998), and Andreoni and Payne (2003) regarding crowding out.

6. Alchian and Kessel (1962) is an early analysis of this, but see Slivinsky (2002), who shows that the nonprofit form of organization can be optimal in certain circumstances.

7. In another article regarding competition, Lakdawalla and Philipson (1998) analyze competitive equilibrium in an industry with a mix of for-profit and nonprofit firms. See Rose-Ackerman (1996) for a relatively recent survey that discusses many of the issues noted here.

We model this competition for donations as a dynamic game. In period one, the organizations choose their promotional expenditures and the fraction of donations for the contractible input. In period two, donors observe the choices of the organizations and choose how to allocate their donations. Finally, in period three the organizations choose how to allocate the noncommitted fraction of donations between the noncontractible input and perquisite consumption. We find that as the number of organizations increases, the share of donations committed to output rises, whereas the share of donations taken as perquisite consumption falls. However, the fraction of resources devoted to promotional expenses rises. Contractibility is also shown to have an important role. The greater is the ability to contract on the use of donations, the lower is the implicit price. Moreover, contractibility and competition interact in a mutually reinforcing manner. A greater ability to contract on the use of donations increases the negative effect of competition on the implicit price.

Section 3 of this article discusses the data we use to test the model and describes our findings. The data are from the National Center for Charitable Statistics (NCCS), a near universe of nonprofit firms. We select sectors of the nonprofit industry that are locally based and reasonably homogeneous within each sector. Thus, our sample is both more tailored to testing the model and much larger than the typical empirical analysis of nonprofit firms. There is considerable variation in the number of nonprofit organizations across metropolitan statistical areas (MSAs) within each sector, and we use this as our empirical measure of the variation in competition for donors. Specifically, competition within each MSA–sector pair is measured by the Herfindahl index, the CR4, and by a measure related to Bresnahan and Reiss (1991), which addresses possible endogeneity problems in the other market power variables. We proxy the ability to contract on the use of donations by the importance of tangible assets of the nonprofit because tangible assets (e.g., buildings) are more easily observed by donors than other inputs used by firms.

We estimate the effect of competition and contractibility on administrative expenditures and on fundraising expenditures, as fractions of revenue. Though there are measurement error issues, our findings are strong. The fraction of expenditures on administration is lower in MSA–sector pairs with greater competitiveness and greater contractibility. Fundraising expenses increase with greater competition and fall with a greater ability to contract on the use of donations. Also, these effects interact so that contractibility increases the effectiveness of competition in reducing administrative expenses and decreases the tendency of competition to increase fundraising expenditures. Finally, Section 4 offers summary and concluding comments.

2. The Model

In this section we introduce a simple model to investigate how competition may alter the behavior of nonprofit organizations. We have in mind a situation in which nonprofit organizations provide a service to donors. For instance, donors may wish to help less fortunate individuals, but such activity may

be costly to the donor. A charitable organization may then offer to take in donations from donors and to use the donations to provide the services desired by the donor. The provision of this service is generally noncontractible, and hence, there may be a hidden action problem because donors have no direct control over the use of their donations.

Nonprofit organizations generally provide information to the public on revenues and expenses. The main categories of reported expenses include (i) *program services*, which are expenses directly related to the output of the organization; (ii) *promotional expenses*, which include expenses on activities to raise revenue; and (iii) *administrative expenses*, which include managerial compensation as well as expenses on other activities related to the administration of the organization. The reported expenses of an organization provide some information about how the organizations use donations, but the information is incomplete because many expenditures are unobservable. For instance, expenses reported under administrative expenses may include real administrative expenses that are necessary to improve the performance of the organization, but they may also include expenses on perquisites which only increase the utility of the managers. Finally, because the output of the organization is unlikely be observable and real administrative expenses and expenses on perquisites are unobservable, donors cannot write enforceable contracts on these variables.

Therefore, whereas expenditures on some inputs, such as capital expenditures, may be observable to the donors and there is less opportunity for perquisite consumption, expenditures on other inputs, such as administrative expenses, are likely to be unobservable and there may be a greater opportunity for perquisite consumption. The model is based on this observation. We assume that expenditures on some inputs are observable, whereas expenditures on other inputs are unobservable. Also, we assume that the organizations derive utility from the consumption of perquisites, which is unobservable because it is included with expenditures on other unobservables. The consumption of perquisites depends on the preferences of the organization and is positive if the organizations are only partially altruistic. Finally, although perquisite consumption is unobservable, donors infer such activities in equilibrium and choose their donations based on the expected equilibrium behavior of the organizations.

2.1 Description of the Model

2.1.1 Nonprofit Organizations.

Consider a market with N organizations. The number of organizations serves as our index of competition, and as the number of organization increases, the market is considered more competitive. We assume each organization produces a differentiated service q_i valued by potential donors. The organizations compete for donations via (i) promotional expenses and (ii) the use of donations. Promotional expenditures enhance the utility donors obtain from the output of the organization, but increased promotional expenditures reduce the resources available for program services.

We consider charitable organizations, but the analysis can be extended to organizations, such as hospitals, that have additional sources of revenue. For simplicity, we drop the subscript notation when we describe a typical organization. Consider an organization that receives donations $d \in R_+$ from the donors. The donations are used to cover expenditures on program services (E_S), administrative expenses (E_A), promotional expenditures (E_F), and expenditures on perquisites (M). Each organization operates under the nondistribution constraint, namely

$$E_S + E_A + E_F + M = d. \tag{1}$$

Program services. As discusses previously, we assume expenditures on some inputs are contractible, but expenditures on other inputs are noncontractible. In addition, as described in Appendix A online,[8] if we assume inputs enter the production function multiplicatively, then the production function can be written as

$$q_i = (y)^{\beta}[(x_1)^{\gamma}(x_2)^{1-\gamma}]^{1-\beta}, \tag{2}$$

where $y \in R_+$ represents expenditures on contractible inputs, $x_1 \in R_+$ represents expenditures on noncontractible inputs, and $x_2 \in R_+$ represents expenditures on noncontractible administrative inputs.[9] Therefore, we have

$$E_S = y + x_1 \quad \text{and} \quad E_A = x_2$$

as the expenditures on program services and administrative expenses, respectively. The administrative expenses represent real administrative expenses, which will generally differ from reported administrative expenses because reported expenses will generally include some expenditures on perquisites.

As discussed in the appendix online, the parameter $\beta \in [0,1]$ represents the relative importance of the contractible inputs in the production function and can be intuitively and reasonably interpreted as a *measure of contractibility*. As the relative importance of the contractible inputs increases, the model is closer to a situation in which the organizations can credibly contract with the donors on the use of donations. Alternatively, as the relative importance of the contractible inputs decreases, the game more closely describes a situation in which the organization cannot credibly contract with the donor. Therefore, we will be able to analyze how competition and the ability to contract on the use of donations alter the behavior of the organizations.

Perquisites. The expenditures on perquisites (M) include expenditures that increase the utility of the managers but do not contribute to the program

8. Appendix A and Appendix B can be found online at http://gatton.uky.edu/Faculty/Garen/jleoAppendix.pdf.

9. Essentially, these variables represent an aggregation of all contractible and noncontractible inputs. For details, see Appendix A online.

services of the organization. The consumption of perquisites may be especially important in nonprofit organizations. Because the use of donations is generally noncontractible, organizations have an incentive to use donations for personal consumption. Moreover, because of the nondistribution constraint, which prevents the organization from distributing residual income to the members who control the organization, any use of donations for personal consumption must be in the form of perquisites.

Promotional expenditures. The promotional expenditures (E_F) are expenditures that enhance the donors' valuation of the output of the organization. For instance, an organization may provide donors with information about their program services and may offer other services in appreciation for donations. Alternatively, promotional expenditures may provide information to potential donors about the existence and nature of the organization. Hence, we view promotional expenditures as another margin over which the organizations may compete for donations.

We assume each organization has preferences over administrative expenses and program services. For the purpose of illustration and to generate concrete results we assume that the preferences of an organization are represented by the utility function

$$V(M_i, q_i) = (M_i)^a (q_i)^{1-a}, \tag{3}$$

where $1 - a \in (0,1)$ is a measure of the altruistic preferences of the organization.

The assumption of altruistic organizations is standard and consistent with the evidence. Moreover, if donors are unable to contract on the provision of services, then altruism is a necessary condition for the existence of nonprofit organizations. The assumption of altruistic organizations has a number of interpretations and does not necessarily mean the managers of the organization are altruistic. For instance, the objective of a charitable organization is to provide charitable services. Therefore, from a legal perspective, the managers of the organization are required by law to pursue the objectives of the organization. Hence, we can interpret the measure of altruism as a measure of the extent to which the board of directors and donors are able to monitor the behavior of the managers.

2.1.2 Donors. The donors value the services of the organizations and wish to provide donations. For simplicity, we assume there exists a representative donor and we model preferences over the differentiated services with the standard formulation of a constant elasticity of substitution (CES) subutility function. Therefore, the preferences of the representative donor over the program services $(q_1, \ldots, q_N)$ of the organizations are described by the utility function

$$u(q_1, \ldots, q_N) = \left[\sum_{i=1}^{N} [(\sigma_i)^{\delta} q_i]^{\alpha} \right]^{1/\alpha}, \tag{4}$$

where $\sigma_i \in [0, 1]$ represents the fraction of donations dedicated to promotional expenditures, $\delta \in [0, 1]$ measures the importance of promotional expenditures to the donor, and $\alpha \in (0, 1)$ measures product differentiation. Finally, we assume that the representative donor has decided to donate D dollars and we then consider how the donor optimally chooses the allocation $(d_1, \ldots, d_N)$ to maximize his/her utility.

The preferences of the representative donor deserve some explanation. We assume the representative donor derives utility from the services (q_i) of the organizations. Moreover, the utility derived from the services of a particular organization increases with promotional expenditures. This could occur for a number of reasons. For instance, if promotional expenditures enhance the services of the organization or provide other services to donors, then promotional expenditures enter directly in the utility function of the representative donor. Alternatively, if we think of promotional expenditures mainly as "advertising," which provides information about the existence and nature of the organization, then promotional expenditures do not enter directly into the utility function of the representative donor. In this situation, we interpret the previous utility function as a "reduced-form" utility function, which captures the idea that increases in promotional expenditures induce more donations.

The assumption of a representative donor is not essential for the results. For instance, we would obtain the same results if we assume there are multiple identical donors, each of which has some nonvariable quantity of donations to allocate to the organizations. Then, given the donations of other donors, each donor would allocate their donations to the organizations with the greater marginal utility from donations. In equilibrium, the marginal utility from donations is equal across organizations, as in the problem with a representative donor. Therefore, the results would be identical.

The assumption of a fixed quantity of donations is more substantive but is unlikely to affect the qualitative nature of the results. A possible interpretation for this assumption is that donors derive utility mainly from the quantity of their donations, as in the warm-glow theory of donations (Andreoni 1990), but nonetheless choose to donate to organizations with a more productive use of donations. Hence, the behavior of organizations has a greater effect on the allocation of donations than on the amount of donations. Finally, the assumption of a representative donor and a fixed quantity of donations imply we do not consider the free rider problem explicitly. This does not necessarily represent a problem for the model because there is no assumption that the quantity of donations is optimal. The quantity of donations could be taken to be the equilibrium quantity of donations in the game in which the donors choose how much to donate and where to allocate their donations. Thus, we do not model free riding in order to maintain focus on the analysis of competition and contractibility.

2.1.3 Description of the Game. An important question for the description of the game concerns the extent to which the organizations can contract with the

donor regarding the use of donations. We assume an organization can credibly contract on the fraction of donations to be used in promotional expenditures and over the fraction of donations allocated to the contractible inputs (y). However, the organization cannot credibly contract on the expenditures (x_1, x_2) on the noncontractible inputs and administrative expenses because such expenditures are unobservable.

Hence, we model the interaction of the organizations and the donor as an extensive form game of complete information, where

1. *Competition period*: In period one, the organizations choose the fraction of donations (σ_i) for promotional expenditures and the fraction of donations (μ_i) for expenditures on the contractible inputs.
2. *Donations period*: Then, the donor observes the choices of the organizations and chooses an allocation of donations $(d_1, \ldots, d_N)$.
3. *Production period*: Finally, the organizations receive their donations and choose how to allocate their noncontracted donations to the noncontractible inputs (x_{1i}), administrative expenses (x_{2i}), and perquisites (M_i), which in turn determine the output of the organization.

A number of remarks on the structure of the game are in order. The behavior of the organizations and donors in the real world is quite complex. Organizations and donors interact over time, and donors can observe some of the actions of the organizations in previous periods. Thus, donors may be able to observe previous expenditures on promotional activities and expenditures on some observable inputs, such as capital expenditures. For other inputs, donors will be unable to observe such expenditures, which could potentially include expenditures on perquisites.

The subgame perfect equilibrium can be interpreted as a steady state of this more dynamic situation. Thus, the contract (μ_i, σ_i) can be interpreted as the behavior of the organizations in previous periods, which the donors can observe. Although the donors can also observe the reported administrative expenses, they cannot observe the fraction of donations allocated to perquisites (M) because real administrative expenses and the output of the organization are unobservable. In this sense, the equilibrium of the model captures a steady state of a more dynamic situation.

2.2 Equilibrium Analysis

In this section we derive the subgame perfect equilibrium of the previous game. Hence, we begin with the analysis of the production period (PP), when the organizations choose the allocation of available resources to the noncontractible inputs, administrative expenses, and perquisites.

2.2.1 The Production Subgame.

Consider the PP and assume the organizations have chosen some $(\sigma_1, \ldots, \sigma_N) \in [0, 1]^N$ and $(\mu_1, \ldots, \mu_N) \in [0, 1]^N$ and the donor has chosen the allocation $(d_1, \ldots, d_N) \in R_+^N$ to the organizations.

The problem of an organization is to choose how to allocate the available resources to the noncontractible inputs, administrative expenses, and perquisites.

The problem of an organization in the PP can be stated as

$$\begin{aligned} &\max_{x_{1i}, x_{2i}, M_i} && V(M_i, q_i) \\ &\text{subject to:} && q_i = (\mu_i d_i)^{\beta}[(x_{1i})^{\gamma}(x_{2i})^{1-\gamma}]^{1-\beta} \\ & && x_{1i} + x_{2i} + M_i \leq (1 - \mu_i - \sigma_i)d_i \end{aligned} \tag{PP}$$

where $\mu_i d_i$ represents expenditures on the contractible inputs and $\sigma_i d_i$ represents promotional expenditures. The necessary conditions for a maximum are

$$\begin{aligned} \frac{\partial V(M_i, q_i)}{\partial q_i}\frac{\partial q_i}{\partial x_{1i}} - \lambda &= 0, \\ \frac{\partial V(M_i, q_i)}{\partial q_i}\frac{\partial q_i}{\partial x_{2i}} - \lambda &= 0, \\ \frac{\partial V(M_i, q_i)}{\partial M_i} - \lambda &= 0, \\ x_{1i} + x_{2i} + M_i &= (1 - \mu_i - \sigma_i)d_i, \end{aligned} \tag{5}$$

where λ denotes the Lagrangian multiplier. The expenditures on noncontractible inputs (x_1) and administrative expenses (x_2) increase utility by increasing output, whereas expenditures on perquisites (M) increase utility directly. Total expenditures are constrained by donations.

The previous problem has a unique interior solution, which is derived in Appendix B online. In any subgame perfect equilibrium, the allocation of donations to the noncontractible inputs, administrative expenses, and perquisites are given by

$$\begin{aligned} x_{1i}(\mu_i, \sigma_i, d_i) &= \left[\frac{\gamma(1-\beta)(1-a)}{a + (1-\beta)(1-a)}\right](1 - \mu_i - \sigma_i)d_i, \\ x_{2i}(\mu_i, \sigma_i, d_i) &= \left[\frac{(1-\gamma)(1-\beta)(1-a)}{a + (1-\beta)(1-a)}\right](1 - \mu_i - \sigma_i)d_i, \\ M_i(\mu_i, \sigma_i, d_i) &= \left[\frac{a}{a + (1-\beta)(1-a)}\right](1 - \mu_i - \sigma_i)d_i. \end{aligned} \tag{6}$$

Hence, the perquisites and output of an organization, as a function of donations (d_i), the fraction of donations dedicated to the contractible inputs (μ_i), and the fraction of donations dedicated to promotional expenditures (σ_i), are determined by

$$\begin{aligned} \tilde{M}_i(\mu_i, \sigma_i, d_i) &= A(1 - \mu_i - \sigma_i)d_i, \\ \tilde{q}_i(\mu_i, \sigma_i, d_i) &= B(\mu_i)^{\beta}(1 - \mu_i - \sigma_i)^{1-\beta}d_i, \end{aligned} \tag{7}$$

where

$$A = \left[\frac{a}{a + (1-\beta)(1-a)}\right] \quad \text{and}$$

$$B = \left[[(\gamma)^{\gamma}(1-\gamma)^{1-\gamma}]\left(\frac{(1-\beta)(1-a)}{a + (1-\beta)(1-a)}\right)\right]^{1-\beta}.$$

2.2.2 The Donations Subgame. We now consider the donations period (DP). Assume the organizations have chosen some $\sigma = (\sigma_1, \ldots, \sigma_N) \in [0,1]^N$ and $\mu = (\mu_1, \ldots, \mu_N) \in [0,1]^N$ and consider the problem of the donor, namely

$$\begin{aligned} \max_{d_1, \ldots, d_N} \quad & u(q_1, \ldots, q_N) \\ \text{subject to :} \quad & q_i = \tilde{q}_i(\mu_i, \sigma_i, d_i) \\ & \sum_{i=1}^{N} d_i \leq D. \end{aligned} \tag{DP}$$

The necessary conditions for a maximum are

$$\frac{\partial u(q_1, \ldots, q_N)}{\partial q_i}\frac{\partial \tilde{q}_i(\mu_i, \sigma_i, d_i)}{\partial d_i} - \lambda = 0, \quad i = 1, \ldots, N,$$

$$\sum_{i=1}^{N} d_i = D \tag{8}$$

where λ denotes the Lagrangian multiplier.

Each donor anticipates the behavior of organizations in the PP and allocates donations to equate the marginal utility of donations across organizations. This problem has a unique interior solution, which is derived in Appendix B online. The subgame perfect equilibrium allocation of donations $(d_1, \ldots, d_N)$ is given by

$$d_i(\mu, \sigma) = \left[\frac{(w_i)^{\alpha/(1-\alpha)}}{\sum_{k=1}^{N}(w_k)^{\alpha/(1-\alpha)}}\right], \quad i = 1, \ldots, N, \tag{9}$$

where

$$w_i = (\sigma_i)^{\delta}(\mu_i)^{\beta}(1 - \mu_i - \sigma_i)^{1-\beta}. \tag{10}$$

The equilibrium allocation of donations yields the intuitive results that the donations d_i to a particular organization (i) increase with the fraction of donations (μ_i) dedicated to the contractible inputs and with the fraction of donations (σ_i) dedicated to promotional expenditures and (ii) decrease with the respective variables of the other organizations.[10]

10. Technically, donations d_i may decrease with μ_i and σ_i if these variables exceed their optimal values from the donor's perspective, but this does not occur in equilibrium.

2.2.3 The Competition Subgame. Finally, in the competition period (CP) the organizations *simultaneously* choose the shares of donations for the contractible input (μ_i) and for promotional expenditures (σ_i). The perquisites and output of an organization are given by

$$\tilde{M}_i(\mu_i, \sigma_i, d_i(\mu.\sigma)) = A(1 - \mu_i - \sigma_i)d_i(\mu.\sigma),$$
$$\tilde{q}_i(\mu_i, \sigma_i, d_i(\mu.\sigma)) = B(\mu_i)^{\beta}(1 - \mu_i - \sigma_i)^{1-\beta}d_i(\mu.\sigma).$$

The organizations have a strategic problem because the donations of an organization depend on the behavior of the other organizations. Hence, the best response function of an organization is determined by the solution to the problem

$$\begin{aligned} &\max_{\mu_i, \sigma_i} && V(M_i, q_i) \\ &\text{subject to :} && M_i = \tilde{M}_i(\mu_i, \sigma_i, d_i(\mu, \sigma)) \\ & && q_i = \tilde{q}_i(\mu_i, \sigma_i, d_i(\mu, \sigma)). \end{aligned} \tag{CP}$$

The necessary conditions for a maximum are

$$\frac{\partial V}{\partial M_i}\left[\frac{\partial \tilde{M}_i}{\partial \mu_i} + \frac{\partial \tilde{M}_i \partial d_i}{\partial d_i \partial \mu_i}\right] + \frac{\partial V}{\partial q_i}\left[\left[\frac{\partial \tilde{q}_i}{\partial \mu_i} + \frac{\partial \tilde{q}_i \partial d_i}{\partial d_i \partial \mu_i}\right]\right] = 0,$$
$$\frac{\partial V}{\partial M_i}\left[\frac{\partial \tilde{M}_i}{\partial \sigma_i} + \frac{\partial \tilde{M}_i \partial d_i}{\partial d_i \partial \sigma_i}\right] + \frac{\partial V}{\partial q_i}\left[\left[\frac{\partial \tilde{q}_i}{\partial \sigma_i} + \frac{\partial \tilde{q}_i \partial d_i}{\partial d_i \partial \sigma_i}\right]\right] = 0. \tag{11}$$

The choices of μ_i and σ_i involve the following trade-offs. A higher μ_i increases M_i by increasing the donations that can be diverted to perquisite consumption but reduces M_i by committing a larger share of the donations to the inputs in production. In addition, a larger value of μ_i increases q_i by increasing the donations available to devote to production of the good and also by tending to commit to a larger share of donations to be used for output. The equilibrium μ_i balances these costs and benefits on the margin. Similar effects arise for the choice of promotional expenses.

The necessary conditions for a maximum with our functional forms are shown in Appendix B online. The appendix also derives the symmetric equilibrium. The symmetric subgame perfect equilibrium fractions of donations dedicated to the contractible input (μ^*) and promotional expenditures (σ^*) are

$$\mu^* = \beta\left[\frac{(1-a) + \Delta}{1 + (1+\delta)\Delta}\right] \quad \text{and} \quad \sigma^* = \left[\frac{\delta\Delta}{1 + (1+\delta)\Delta}\right], \tag{12}$$

where

$$\Delta = \left(\frac{\alpha}{1-\alpha}\right)\left(\frac{N-1}{N}\right). \tag{13}$$

The term Δ can be interpreted as an index of competition. This index depends on the number of organizations and the extent of product differentiation.

The extent of product differentiation is measured by the parameter $\alpha \in (0, 1)$, where an increase in α reduces product differentiation, which means the outputs are close substitutes. Hence, the index of competition increases with the number of organizations and decreases with product differentiation.

Denote by $\theta \in [0, 1]$ the fraction of donations allocated to expenditures on perquisites, namely $\theta = M/d$. Then, the previous results imply

$$\begin{aligned}\theta^* &= \left[\frac{a}{a + (1-a)(1-\beta)}\right](1 - \mu^* - \sigma^*) \\ &= \left[\frac{a}{a + (1-a)(1-\beta)}\right]\left[1 - \beta\left[\frac{(1-a) + \Delta}{1 + (1+\delta)\Delta}\right] - \left[\frac{\delta\Delta}{1 + (1+\delta)\Delta}\right]\right].\end{aligned} \tag{14}$$

We summarize the previous analysis in the proposition below.

Proposition 1. There exists a symmetric subgame perfect equilibrium. Moreover, the equilibrium fraction of donations (θ^*) dedicated to expenditures on perquisites is

$$\theta^* = \lambda\left[\frac{a(1+\Delta)}{1 + (1+\delta)\Delta}\right] + (1-\lambda)\left[\frac{a}{1 + (1+\delta)\Delta}\right],$$

where

$$\lambda = \left[\frac{(1-\beta)}{a + (1-a)(1-\beta)}\right] \in [0, 1].$$

In addition, denote by $\phi_1 \in [0, 1]$ the equilibrium fraction of donations allocated to the noncontractible inputs and by $\phi_2 \in [0, 1]$ the equilibrium fraction of donations allocated to administrative expenses. Then, we have

$$\begin{aligned}\phi_1^* &= \left[\frac{\gamma(1-\beta)(1-a)}{a + (1-a)(1-\beta)}\right](1 - \mu^* - \sigma^*) \\ &= \left[\frac{\gamma(1-\beta)(1-a)}{a + (1-a)(1-\beta)}\right]\left[1 - \beta\left[\frac{(1-a) + \Delta}{1 + (1+\delta)\Delta}\right] - \left[\frac{\delta\Delta}{1 + (1+\delta)\Delta}\right]\right]\end{aligned}$$

and

$$\begin{aligned}\phi_2^* &= \left[\frac{(1-\gamma)(1-\beta)(1-a)}{a + (1-a)(1-\beta)}\right](1 - \mu^* - \sigma^*) \\ &= \left[\frac{(1-\gamma)(1-\beta)(1-a)}{a + (1-a)(1-\beta)}\right]\left[1 - \beta\left[\frac{(1-a) + \Delta}{1 + (1+\delta)\Delta}\right] - \left[\frac{\delta\Delta}{1 + (1+\delta)\Delta}\right]\right].\end{aligned}$$

2.2.4 Comparative Statics. Finding the comparative statics with respect to competitiveness (N) and the measure of contractibility (β) is straightforward. They are summarized below.

Proposition 2. Consider a symmetric equilibrium of the previous game. Then, we have the following comparative statics results.

(i) An increase in competition decreases the fraction of donations dedicated to expenditures on perquisites but increases the fraction of donations dedicated to promotional expenditures, that is,

$$\frac{\partial \theta^*}{\partial N} < 0 \quad \text{and} \quad \frac{\partial \sigma^*}{\partial N} > 0.$$

(ii) An increase in the measure of contractibility decreases the fraction of donations dedicated to expenditures on perquisites, that is,

$$\frac{\partial \theta^*}{\partial \beta} < 0.$$

(iii) The effectiveness of competition in lowering expenditures on perquisites is enhanced by the measure of contractibility, namely

$$\frac{\partial^2 \theta^*}{\partial \beta \partial N} < 0.$$

The intuition behind Proposition 2 is straightforward. Proposition 2(i) indicates that an increase in the number of organizations increases competition and induces the organizations to attract donors by lowering the fraction of donations devoted to perquisite consumption and by increasing spending on promotional expenses. Proposition 2(ii) simply states that a greater ability to contract on the use of donations induces the organizations to increase the fraction of donations allocated to the contractible inputs and lowers the expenditures on perquisite consumption. Finally, Proposition 2(iii) is explained as follows. One of the means by which organizations compete is by increasing the fraction of donations committed to the contractible inputs, which lowers perquisite consumption. This is a more effective means of competition when the contractible inputs are relatively important for production. Thus, competition has a larger effect on reducing perquisite consumption, the greater the ability to contract on the use of donations.

Technically, the results in Proposition 2 with respect to the number of organizations also hold with respect to product differentiation. Proposition 1 illustrates how the equilibrium fraction of donations allocated to perquisites depends on the index of competition (Δ), which is determined by the number of organizations and the extent of product differentiation. Intuitively, as the number of organizations increases or as the products become close substitutes, competition for donations intensifies. Therefore, an increase in the index of competition results in a lower equilibrium fraction of donations allocated to the residual.

As discussed previously, *reported* allocation of expenses of an organization will generally differ from the real allocation of expenses because of expenditures on perquisites. Expenses reported under administrative expenses may include real administrative expenses as well as expenses on perquisites. Generally, the opportunity for perquisite consumption is likely to be associated with unobservable activities, and expenditures on perquisites are likely to

be included in reported expenditures on unobservable inputs as well as on administrative expenses. Suppose expenditures on perquisites (M) are allocated to reported expenditures on noncontractible inputs (x_1^{R}) and reported administrative expenses (x_2^{R}) in some proportion $\tau \in (0,1)$, namely

$$x_1^{\mathrm{R}} = x_1 + \tau M,$$

$$x_2^{\mathrm{R}} = x_2 + (1-\tau)M.$$

The proposition below summarizes the implications of the model for the effects of competition on reported expenses.

Proposition 3. Assume expenditures on perquisites are allocated to reported expenditures on noncontractible inputs and reported administrative expenses in some proportion $\tau \in (0,1)$. Then, we have

(i) An increase in competition decreases the fraction of donations reported as (a) noncontractible inputs and (b) administrative expenses, namely

$$\frac{\partial(\phi_1^* + \tau\theta^*)}{\partial N} < 0 \quad \text{and} \quad \frac{\partial(\phi_2^* + (1-\tau)\theta^*)}{\partial N} < 0.$$

(ii) An increase in the measure of contractibility decreases the fraction of donations reported as (a) noncontractible inputs and (b) administrative expenses, namely

$$\frac{\partial(\phi_1^* + \tau\theta^*)}{\partial \beta} < 0 \quad \text{and} \quad \frac{\partial(\phi_2^* + (1-\tau)\theta^*)}{\partial \beta} < 0.$$

The effects of competition and contractibility continue to hold when looking at reported administrative expenditures and reported expenditures on noncontractible inputs. In particular, an increase in competition or contractibility decreases the fraction of donations reported as administrative expenses. The cross-partial effects are ambiguous. From the previous proposition, the cross-partial effect for expenses on perquisites is negative, but the cross-partial effects for real administrative expenditures and expenditures on noncontractible inputs are ambiguous. Therefore, the cross-partial effects for reported administrative expenditures and expenditures on noncontractible inputs are ambiguous. Hence, it becomes an empirical question to determine the sign of the cross-partial effect on reported expenses.

Finally, there is a sense in which perquisites and promotional expenditures take resources away from production and hence increase the implicit price of donations. Therefore, one may consider the question of how competition affects the implicit price of donations. The prediction here is ambiguous because an increase in competition decreases perquisites but increases promotional expenses. Hence, the overall effect on the price of donations depends on the relative magnitude of the individual effects. However, when the ability to contract on the use of donations increases, competition has a relatively greater

effect on perquisites, suggesting that an increase in competition is likely to lower the price of donations in this situation.

3. The Data and Findings

This section uses data on nonprofit firms to examine their expenditure patterns and to determine how they fit our model. After describing the data, we present the results.

3.1 Nonprofit Data

3.1.1 The Sample. With two important exceptions,[11] all nonprofit organizations exempt from taxation under section 501(c)(3) of the tax code are required to file Internal Revenue Service (IRS) Form 990. This form requests a variety of financial data, including detailed revenue and expense information. Also, when a firm files for nonprofit status, the IRS collects descriptive information regarding the firm's charitable purpose. To assist researchers, the NCCS compiles data from these returns into annual data sets. The resulting database contains financial information for the full population of nonprofit firms required to file Form 990. We use the year 2000 data.[12]

More importantly, the NCCS classifies nonprofits according to a system called the National Taxonomy of Exempt Entities (NTEE). The NTEE operates similar to the Standard Industrial Classification (SIC) in that it specifies broad categories (e.g., arts or medical research) but can be broken down into greater detail according to the level of aggregation desired. This taxonomy is critical because it allows us to dissect the nonprofit population into very specific subsectors of reasonably homogenous firms. Once these sectors have been selected, we are able to place firms into geographically defined markets.

In selecting nonprofit firms for this study, we need a systematic method for selecting a cross-section of like firms who compete for donations within their relevant economic markets. To accomplish this, all nonprofit organizations in subsectors meeting a series of criteria were selected. These criteria are as follows.

1. The nonprofit firms in the subsector are local, in terms of the consumption of their output and their source of donations.
2. The nonprofit firms in the subsector are reasonably homogeneous across geographic markets.
3. The nonprofit firms in the subsector are reasonably distinct from for-profit firms.
4. The nonprofit firms in the subsector should receive a nontrivial fraction of their revenues from donations.

11. Nonprofit organizations with less than $25,000 in revenue as well as religious congregations are not required to file Form 990. The IRS keeps no data on these firms.

12. A longitudinal sample is not used. Although the NCCS has compiled data for a number of years, the full set of variables used in this study are available only for a few years. Because competition changes so minimally over a short time period, a fixed-effects estimation of the effects of competition is not workable.

Based on these criteria, a list of 16 subsectors was developed and listed in Table 1.[13] These subsectors provide us with a broad spectrum of nonprofit services, including multiple subsectors from fine arts organizations and many human service industries. Firms in these subsectors were then placed into discrete geographic markets defined by their MSA. A total of 280 MSA markets are possible per subsector, though, no single subsector contains an organization in every MSA. In all, the modified data set contains 23,654 firms dispersed among 2252 markets.[14]

3.1.2 Measures of Resource Allocation. The dependent variable of interest summarizes the allocation decisions of the nonprofit firm. When a donation is made to a nonprofit organization, some fraction of that dollar is allocated toward expenses directly related to the firm's charitable purpose. Form 990 designates this as program service expenditures. Other parts of that donor dollar can be allocated toward general management/administrative expenses, fundraising, or simply kept as net income. These expenditures imply an implicit price to donors. Within the Form 990, nonprofit organizations must designate expenditures into one of these primary categories.[15]

Perquisite consumption may exist in each of these accounting categories. However, as noted previously, the opportunity for perquisite consumption is likely to be associated with nonobservable activities, implying that expenditures on perquisites are likely to be included with reported expenditures on nonobservable inputs as well as with reported administrative expenses. Also, it would seem that promotional expenses are most likely to be in the fundraising category. It is unlikely that perquisite consumption would be included in this category since nonprofits normally desire to report low fundraising expenses. We do not attempt to directly estimate perquisite consumption, but rely on the predictions of our model. Recall that our model predicts what happens to reported administrative expenses and other reported expenses assuming that perquisite consumption is divided among noncontractible expenditures. Thus, we examine variations in reported expenditure decisions among these major categories as market structure and other conditions vary.

One of our measures of revenue allocation is called MANAGEMENT. It is the fraction of total revenues reported as allocated to administrative and

13. As with other empirical studies of competition, we face the problem of appropriately defining markets with little information on cross-price elasticities. Similar to the literature, we start with the classification system in the data (NTEE codes in our case, SIC codes in the industrial organization literature). Then, we utilize our four criteria and institutional knowledge of the nonprofit sector to select subsectors for study.

14. By configuring the data this way, we are implicitly assuming that competition for donors occurs primarily within MSA and also within the group of firms in that sector.

15. Historically, there has been considerable variation among firms as to how those allocations are justified. However, there have been a series of accounting recommendations posted by the AICPA to encourage standardization of the allocation of joint costs. The most recent recommendation indicated on Form 990 is SOP 98-2. Nonprofit firms may indicate on Form 990 whether they are following this SOP.

Table 1. Nonprofit Subsectors

Sector	Description and NTEE code	Number of firms	Number of markets	Average number of firms per market
1	Museums A50–A57	525	173	3
2	Performing Arts A62–A6C	4285	244	18
3	Community Health Treatment E30–E42	2480	183	14
4	Abuse Prevention I70–I73	218	104	2
5	Employment and Vocational Training J20–J33	2653	188	14
6	Nursing, home health care E90–E92	4079	118	35
7	Substance Abuse Prevention and Treatment F20–F22	737	170	4
8	Hot Lines and Crisis Prevention F40–F42	107	64	2
9	Crime Prevention and Rehabilitation I20–I44	285	116	2
10	Food Pantries and Programs K30–K36	332	122	3
11	Public Housing and Rehabilitation L21–L25	864	154	6
12	Homeless Shelters L40–L41 and P85	2131	108	20
13	Community Centers P28	257	102	3
14	Family Counseling P46	1989	73	27
15	Senior Centers P81	2418	157	15
16	Residential Care and Group Homes P73	717	176	4
	Totals	24,077	2252	11

Source: 2000 NCCS Digitized Data.

management expenditures. Another measure is FUNDRAISE, which is the fraction of revenues spent on fundraising. Based on information from Form 990, we further break administrative expenses into OVERHEAD and COMPENSATION. Overhead refers to budget items that constitute management expenses not associated with salaries. These expenses may include such areas as travel, office rental, or office supplies. Compensation, in this case, refers to wages and benefits paid directly to officers and directors of the nonprofit organization. Finally, nonprofit firms may keep net income even though they are not legally allowed to disperse that residual to stakeholders. Table 2 provides a breakdown of means for these variables by subsectors.[16]

There are various measurement issues involving these variables. First, allocation decisions recorded in the Form 990 are self-reported and subject to substantial judgment on the part of the firm. Despite the American Institute

16. We express expenditures relative to the firm's total revenue. In our model, donations are the firm's entire source of revenue, but empirically, nonprofits have other revenue sources, such as government grants and the sale of some services. We experiment with use of expenditures relative to donations as the dependent variable in our estimation, but total revenue is our preferred denominator. This is because total revenues are much less volatile than donations and so not as sensitive to the time frame of the data. Note that using donations in the denominator has other disadvantages. It is possible to have values of expenditure ratios greater than 1. Many firms in the data set do not rely as heavily on donations as others so their ratios tend to skew the data by being much larger than 1. This is not a problem with total revenues in the denominator.

Table 2. Summary of Expense Allocations, by Sector

Sector	Management[a]	Compensation[b]	Overhead[c]	Fundraise[d]	Net income[e]	Total[f]
1	0.19	0.08	0.04	0.04	0.20	0.23
2	0.10	0.03	0.04	0.02	0.01	0.12
3	0.08	0.05	0.02	0.01	0.06	0.10
4	0.10	0.05	0.03	0.03	0.11	0.13
5	0.46	0.02	0.08	0.00	0.24	0.46
6	0.11	0.07	0.02	0.04	0.06	0.15
7	0.14	0.07	0.04	0.01	0.07	0.15
8	0.15	0.08	0.03	0.04	0.06	0.18
9	0.13	0.06	0.03	0.02	0.08	0.15
10	0.07	0.04	0.02	0.01	0.14	0.09
11	0.12	0.04	0.03	0.00	0.07	0.12
12	0.12	0.03	0.02	0.01	0.05	0.13
13	0.13	0.07	0.03	0.03	0.09	0.16
14	0.04	0.03	0.01	0.02	0.07	0.07
15	0.03	0.01	0.01	0.00	0.44	0.04
16	0.13	0.06	0.03	0.01	0.08	0.14
All	0.13	0.05	0.03	0.02	0.11	0.15

Source: 2000 Digitized Data: The NCCS.

[a]Management expenses: management and general (line 14 on Form 990) divided by total revenue (line 12).

[b]Compensation: total compensation expenses including wages, pension plans, and other benefits (lines 25–28) divided by total revenue (line 12).

[c]Overhead: selected management expenses including professional fees, supplies, capital, and travel (lines 30–40) divided by total revenue (line 12).

[d]Fundraising expenses: total fundraising expenses (line 15) divided by total revenue (line 12).

[e]Net income: excess revenue (line 18) divided by total revenue (line 12).

[f]Total: the sum of management and fundraising expenses (line 14 + line 15) divided by total revenue (line 12).

for Certified Public Accountants (AICPA) guidelines, this is especially true regarding "joint costs," where a particular expense is disaggregated into program service, management, or fundraising categories. The director of a small nonprofit may legitimately spend time on operations relevant to each of these categories. In this case, the director's salary should be disaggregated and allocated into the categories proportional to the time that he/she spent on those activities. Firms vary widely in the degree of financial sophistication to track such costs. Many simply use rule of thumb that may or may not accurately represent true costs. A careful examination of fundraising practices by Hager and Wing (2004) concludes that there appears to be a fixed, yet unreported fundraising capacity within many nonprofit organizations. This unreported capacity may come from a portion of an executive's time, fundraising activity by the board of directors, or fundraising partnerships with other entities.

Since no tax revenue is actually collected from these organizations, the IRS has little incentive to enforce existing accounting practices. A recent Government Accounting Report to Congress showed that the IRS reviewed only 0.029% of all nonprofit returns in 2001 (Government Accounting Office 2002). This fraction has been steadily falling over the past 5 years. One response of the IRS has been to encourage the appropriate allocation of joint

costs as defined by the AICPA in its SOP 98-2. A checkbox was included on the Form 990 to indicate if the firm was following these standards. However, in the most recent data, less than 1% of firms indicated following SOP 98-2.

Although the potential for misreporting fundraising and management expense appears serious, it does seem that we can make reasonable predictions about the direction of the bias. Given that there are likely to be wide variations in how expenditures are classified, there will be measurement error in this regard. Random measurement error in the dependent variable of a regression does not affect the parameter estimates, but enlarges standard errors, making it more difficult to attain statistical significance. However, the measurement error may not be random. Most donors recognize administrative and fundraising expenses as an implicit cost to them. Nonprofit firms then have a substantial incentive to underreport revenues allocated to these categories. It is difficult to envision a scenario where a firm would wish to report more administrative or fundraising expenses than was accurate. If reports of these two types of expenses are biased downward by a constant amount, then OLS regression generates a biased constant term but the slope coefficients are unbiased.

However, it may be the case that those firms with low values of administrative or fundraising expenses report them more accurately either because they have less to gain by showing lower values of these expenses or lower values would look implausible. Thus, firms with high expenses would have a stronger downward bias in reported expenses than firms with low expenses. This imparts a downward bias in the OLS estimates, making it harder to find any effects. Finally, it is possible for the bias to go the other way. The study of Hager and Wing (2004) regarding fundraising suggests that firms that engage in a small amount of fundraising do not report it as such. This means small values of fundraising activity are underreported and large values are not. This induces an upward bias in the OLS estimates. We examine this further with respect to fundraising in the discussion below.

3.1.3 Measures of Market Concentration and Contractibility. An important interest centers on the relationship between a firm's reported expenditure allocations and the degree of competition it faces. Our model measures competition by the number of firms (N) and by product differentiation (α), and the comparative statics focus on the number of firms. Two standard measures of market competitiveness in the industrial organization literature are the Herfindahl–Hirschman Index (HHI) and the CR4. CR4 measures the market share of the top four firms in the market, whereas HHI captures the entire distribution of market shares within a single number. If firms in an industry are homogeneous, use of the number of firms, HHI, or CR4 makes little difference since each is a function only of N. However, firms in an industry are rarely homogeneous and HHI and CR4 are therefore widely used to capture industry competitiveness. Our nonprofit industries are not homogeneous, so we utilize HHI and CR4 as competitiveness measures. These are calculated for individual

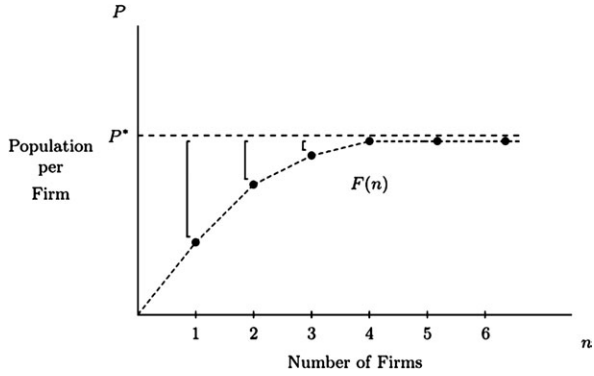

Figure 1. Construction of the FSI measure of competition.

markets from the data available from NCCS. We also experiment with using the number of firms as the measure of competition.

We also use another measure of competition that takes a completely different approach to estimating market power. This stems from the potential endogeneity of market structure, that is, that high profits (in the nonprofit firm's case, high perquisite consumption) attract entry and alter market structure.[17] We address this potential problem with another measure of market power that does not rely on assuming that high concentration or HHI represents market power. It is based on the concepts expressed in Bresnahan and Reiss (1991) and Sutton (1992). Bresnahan and Reiss (1991) note that output per firm in competitive markets is higher than in markets not as competitive. This is because the firms in the former markets produce at the minimum of their average cost curve and the latter produce somewhat less than that. Therefore, the market population of demanders necessary to support a given number of competitive firms is larger than that needed to support the same number of firms in a noncompetitive market. We use this insight in the following way.

As the number of firms in a market increases, it becomes more competitive. As this occurs, one expects population per firm to rise. Once firms reach the output associated with minimum average cost, output per firm remains the same. Thus, market population per firm increases as the number of firms rises and competition intensifies until a plateau is reached. At this plateau, the market is competitive. This is illustrated in Figure 1, where the function $F(n)$ plots the population per firm as a function of the number (n) of firms in the market. Population per firm for each market is graphed on the vertical axis and the number of firms in the market is on the horizontal axis. In this example, population per firm rises with the number of firms in markets with up to four firms and then plateaus at a population of P^* per firm. From this, one concludes that firms have market power in markets with less than four firms.

17. Demsetz (1974) originally argued that there is a simultaneous equation bias in profit-concentration studies.

Table 3. Summary Statistics for Market Power, by Subsector

	HHI				CR4				FSI			
Sector	Mean	SD	Min	Max	Mean	SD	Min	Max	Mean	SD	Min	Max
1	5554	2979	6	10,000	0.91	0.14	0.01	1	0.66	0.34	0.00	0.96
2	1428	2058	12	10,000	0.42	0.37	0.05	1	0.18	0.32	0.00	0.97
3	1285	2604	5	10,000	0.23	0.40	0.00	1	0.11	0.25	0.00	0.90
4	6504	2843	2077	10,000	0.98	0.04	0.87	1	0.70	0.25	0.15	0.92
5	1275	2393	115	10,000	0.32	0.34	0.11	1	0.15	0.30	0.00	0.95
6	388	1498	6	10,000	0.09	0.25	0.01	1	0.06	0.20	0.00	0.95
7	3851	3017	660	10,000	0.81	0.20	0.41	1	0.45	0.38	0.00	0.94
8	6734	3199	1779	10,000	0.96	0.08	0.78	1	0.53	0.30	0.00	0.80
9	6116	2894	1652	10,000	0.94	0.10	0.69	1	0.52	0.36	0.00	0.90
10	6746	2715	2520	10,000	0.97	0.06	0.81	1	0.49	0.37	0.00	0.90
11	2371	2481	272	10,000	0.62	0.28	0.24	1	0.00	0.00	0.00	0.00
12	5779	3467	1180	10,000	0.90	0.15	0.61	1	0.04	0.14	0.00	0.75
13	5149	3005	1250	10,000	0.89	0.13	0.62	1	0.21	0.28	0.00	0.67
14	465	1822	5	10,000	0.07	0.25	0.00	1	0.03	0.14	0.00	0.80
15	1055	2520	6	10,000	0.20	0.35	0.01	1	0.12	0.29	0.00	0.95
16	4570	3276	446	10,000	0.83	0.24	0.26	1	0.35	0.35	0.00	0.90

Source: 2000 NCCS Digitized Data and author's calculations.

To measure market power, we do the following. Within each subsector, we use the cross-sectional variation across markets to estimate $F(n)$ as a spline function of population per firm on the number of firms, holding other market characteristics constant. Our measure of market power for each MSA is how short the market is from its competitive level of population per firm. This is simply the difference $P^* - F(n)$, where P^* is the maximum population per firm where the market becomes competitive and $F(n)$ is the population per firm when there are n firms in the market. We then express this difference as a percent of the competitive population per firm and refer to this measure as Firm Shares Index (FSI). More formally,

$$\text{FSI} = \frac{P^* - F(n)}{P^*}. \tag{15}$$

Unlike the Herfindahl index or the concentration ratio, this index relies on the actual deviation of the market from the competitive outcome regarding population per firm.

Summary statistics of these three market structure measures is in Table 3. Correlation among the three measures is relatively strong. The correlation between HHI and CR4 is 0.86, between HHI and FSI is 0.87, and between CR4 and FSI is 0.82. As one might expect, nonprofit subsectors such as museums compete within markets that are substantially more concentrated relative to senior citizens centers. Curiously, subsector 10 (food pantries and programs) is our most highly concentrated market. It is our suspicion that this type of market structure is driven by a single dominant firm with small organizations that do not meet the $25,000 revenue requirement to file with the IRS. We

Table 4. Firm Commitment: Value of Buildings, Land, and Equipment

Variable	Obs	Mean	SD	Min	Max
TASSET	24,077	1,127,983	3,785,471	0	2.70×10^8

Source: 2000 NCCS Digitized Data (Tangible Assets: line 57 Land, buildings, and equipment).

observe substantial variation in mean concentration measures across as well as within subsectors. Many MSAs have only a single nonprofit firm for a particular subsector, whereas others have dozens.

A second important implication from the model is the role of the ability of firms to contract on specific expense allocations as represented by the parameter β. To operationalize this notion, we develop a proxy for the importance of contractibles from the perspective of donors. Form 990 contains balance sheet information including entries for assets composed of buildings, land, and equipment. These tangible assets are clearly observable to outside donors and thus nonprofits can credibly commit to using funds in this regard. TASSET represents the current dollar value of total assets, which fall into the buildings, land, and equipment category on the balance sheet. Holding constant total assets, a greater value of TASSET suggests a greater importance of contractible inputs in the firm's production function, thus indicates a higher value of β. Table 4 gives the summary statistics for the per-firm dollar value of assets, which are held in land, buildings, or equipment.

There are potential measurement problems with this variable, too. One is that real assets typically are recorded at their historical cost and others items, such as the value of museum collections, may not be recorded at all. The former problem, however, is most serious in periods of high inflation, which the United States has not had for some time. Additionally, even though donors can observe physical structures, they may not be sure of their value. Also, expensive office space for a nonprofit can be a form of perquisite consumption.

Despite these shortcomings, we contend that this proxy captures the basic idea in the model that some expenditures are easier to observe than others, implying a difference in contractibility. Although expenditures on physical assets are not perfectly observable to donors, they are quite observable relative to most other expenditures such as those on staff training or back-office paperwork. Casual observation reinforces this argument: note the difficulty that many nonprofit institutions have in raising unrestricted funds (used for noncontractibles) relative to raising money for buildings. Measurement error obviously remains, but most likely works in the usual way of making it more difficult to find an effect.

3.1.4 Firm and Market Controls. We also control for variation across markets of other determinants of donations. In one version of our estimation, we do so with MSA dummies. In another version, we control directly for various MSA characteristics. Previous studies (e.g., Rooney et al. 2001) suggest that per capita income, education, and population size are primary determinants in the

Table 5. Summary Statistics for Control Variables

Variable	Observed	Mean	SD	Min	Max
Market controls					
Per capita income	23,233	23,582	3559	9899	31,195
Education	23,233	0.34	0.06	0.15	0.55
Unemployment	24,077	4.40	1.29	1.7	31
Population	23,233	3,932,585	4,683,633	57,813	2.12×10^7
Percent black	23,233	0.21	0.09	0.00	0.51
Percent Hispanic	23,233	0.07	0.09	0	0.94
Average wage	24,070	29,488.27	4637.08	17,534	40,089
Firm controls					
Age[a]	19,742	21.40	11.26	2.90	102.99
Accounting fee[b]	24,077	0.60	0.49	0	1
Government grant[c]	24,077	0.40	0.49	0	1
Total assets[d]	24,077	863,936.6	6,804,857	0	6.21×10^8

Source: 2000 NCCS data augmented with data from the State & Metropolitan Area Data Book.

[a]Age of the firm since it received its nonprofit tax status.

[b]Dummy variable indicating if the firm spent positive amounts on professional accounting fees (line 31).

[c]Dummy variable indication if the firm received positive amounts from government grants (line 1c).

[d]Total assets of the firm (line 59).

public's charitable behavior. Education is measured as the fraction of the population that has completed an associates degree or higher. Population and per capita figures are based on MSA data. The unemployment rate for each MSA also is controlled for. Demographic controls for the fraction of the market population which is black and Hispanic are included. We also account for the average wage in each MSA to control for different costs firms face across markets. In this specification, we include dummy variables indicating whether the firm is located in northern, southern, midwestern, or western states.

Total firm assets also are controlled for to net out effects merely due to different-sized firms. We also control for several other firm variables that may be related to implicit governance mechanisms. The age of the firm could proxy for a firm's reputation. A firm choosing to have its accounts audited is indicated by a dummy variable if the firm spent positive amounts on professional accounting fees. Finally, an organization that receives government grants may behave differently due to government monitoring. A summary of all these variables is in Table 5.

3.2 The Findings

Using the previously defined data and variables, we estimate regression equations of the determinants of reported expenditure allocations of the following form:

$$E_{ij} = \alpha_0 + \alpha_1 H_j + \alpha_2 X_j + \alpha_3 Z_{ij} + \alpha_4 C_{ij} + \alpha_5 D_j + \varepsilon_{ij}, \tag{16}$$

where E_{ij} is our set of expense allocation measures (MANAGEMENT, COMPENSATION, OVERHEAD, and FUNDRAISE) for firm i in market j and H_j

represents the measure of market structure (HHI, CR4, or FSI). We use the logarithm of the market structure variables. They are of different metrics so direct comparison is difficult. We take the logarithm so that the coefficients are all interpreted as the effect of a percentage change in market power. X is the vector of market controls and Z is the set of firm-level controls. C is our measure of the importance of contractible inputs (TASSET). Finally, D is a set of dummies indicating the firm is categorized by one of the 16 subsectors described previously.

We also estimate the model with a vector of MSA dummies (M_j) replacing the vector of market controls. The equation is

$$E_{ij} = \alpha_0 + \alpha_1 H_j + \alpha_2 M_j + \alpha_3 Z_{ij} + \alpha_4 C_{ij} + \alpha_5 D_j + \varepsilon_{ij}. \quad (17)$$

Therefore, this specification has both MSA and subsector fixed effects. The equations are estimated by OLS with correction of SEs for repeated observations of the market variables.

Table 6 presents the results of estimating the basic equations as indicated in equation (16).[18] This table uses HHI as the measure of market power, the CR4, and our firm share index (FSI). Results for all are similar. An increase in market power by any measure has a positive and statistically significant effect on the share of revenue spent on managerial and administrative expenses (MANAGEMENT) and on the two components of administrative expenses, COMPENSATION and OVERHEAD. These are in the first three columns of the table. The magnitudes of the effects are similar for HHI and CR4 but are somewhat larger for FSI. A 1% decrease in HHI or CR4 reduces the share of management expenditures by 0.009 or 0.014, respectively, and by 0.064 for a 1% decrease in FSI. As a reference point, recall that the mean management expenditure share is 0.13, or 13%.

The effects on fundraising expenditures are different, however, as seen in the fourth column of the table. A reduction in competition as measured by HHI or FSI reduces the share going to fundraising, and increases in CR4 have no effect. There is statistical significance only for the FSI specification, though. Though not as strong as our findings with management expenses, these results tend to be consistent with the idea that fundraising expenses are a means of competition. As competition for donors diminishes, firms spend less on this activity.[19]

Now consider the effect of our proxy for the ability of the firm to contract on particular expenditures. We anticipate that contractibility reduces the firm's

18. To address concerns about pooling a wide variety of nonprofits into a single regression, slope coefficients on our key competition and contractibility variables were allowed to differ across subsectors. A subsequent F-test indicated that there are statistically significant slope differences across subsectors. To examine this issue further we looked at individual slope coefficients for each subsector. It appears that the statistical significance of the F-test was driven by only one sector, Community Centers. These types of firms are less sensitive to market structure than the remaining classes of firms. Yet even these centers retain a positive slope coefficient for log(HHI). Tests were run with this subsector removed from the sample without substantive impact on the overall results.

19. Though not reported, we also tried using $\ln(N)$ as our measure of competition. The findings showed the same basic results, though statistical significance was not as strong.

Table 6. Regressions of Expenditures Shares

	Management	Compensation	Overhead	Fundraise
HHI[a]				
Log(HHI)	0.009** (7.86)	0.003** (6.44)	0.002** (8.94)	−0.001 (1.30)
Assets[b]	−0.005 (0.21)	0.005 (0.31)	0.004 (0.47)	0.044** (2.62)
Age	325.2** (2.37)	341.2** (4.49)	30.5 (0.60)	375.2** (4.99)
Accounting fee	0.050** (11.80)	0.026** (13.19)	0.025** (17.53)	0.008** (5.02)
Government grant	0.041** (9.81)	0.028** (13.97)	0.005** (4.05)	0.007** (4.16)
TASSET[b]	−0.123* (1.91)	−0.082* (1.88)	−0.058** (2.63)	−0.135** (2.49)
R^2	0.24	0.25	0.17	0.26
CR4[a]				
Log(CR4)	0.014** (11.23)	0.006** (10.30)	0.004** (11.82)	0.000 (0.42)
Assets[b]	−0.011 (0.45)	0.003 (0.19)	0.003 (0.33)	0.044** (2.60)
Age	288.3** (2.19)	321.5** (4.43)	21.50 (0.48)	365.1** (5.00)
Accounting fee	0.052** (12.43)	0.027** (13.99)	0.025** (18.18)	0.008** (5.14)
Government grant	0.039** (9.63)	0.027** (13.91)	0.005** (3.75)	0.006** (4.00)
TASSET[b]	−0.128* (1.80)	−0.084* (1.82)	−0.060** (2.61)	−0.134** (2.48)
R^2	0.24	0.26	0.18	0.26
FSI[a]				
Log(FSI)	0.064** (5.25)	0.013* (1.74)	0.020** (6.01)	−0.026** (3.28)
Assets[b]	−0.001 (0.06)	0.004 (0.30)	0.006 (0.62)	0.040** (2.72)
Age	400.4** (2.84)	375.3** (4.85)	49.50** (1.06)	378.8** (5.23)
Accounting fee	0.052** (11.67)	0.026** (12.77)	0.025** (17.48)	0.007** (4.73)
Government grant	0.043** (10.54)	0.029** (14.12)	0.006** (4.39)	0.008** (4.62)
TASSET[b]	−0.134** (1.98)	−0.080* (1.91)	−0.063** (2.66)	−0.123** (2.59)
R^2	0.23	0.24	0.17	0.27

Regressions are clustered by market; *t*-statistics are in parentheses.

[a]Market control variables (per capita income, education, unemployment, population, percent black, percent Hispanic, and average wage) as well as sector and regional dummies have been suppressed.

[b]Indicates coefficient has been multiplied by 100,000,000 for presentation purposes.

*Statistical significance at the 10% level.

**Statistical significance at the 5% level.

nonprogram expenditures. Our proxy for this, the value of tangible assets (TASSET), has a consistently negative and significant effect on the share spent on management expenses, its two components, and on fundraising.[20] The effects are all statistically significant and similar in magnitude in Table 6. The results show that the magnitude of the effects are that a 1 million dollar increase in tangible assets reduces the both the management expenditure share and fundraising expenditure share by a little more than one-tenth of 1%.[21]

20. Recall that total firm assets are held constant in the regression, so an increase in TASSET represents an increase in the proportion of tangible assets.

21. Previously, we noted possible bias in the fundraising equation due to the fact that nonprofit firms that do only small amounts of fundraising may report it as zero. This generates a tobit-like censoring in the following way. Writing the fundraising equation as $y = \beta x + \varepsilon$, the above misreporting implies that the actual y is observed when $\beta x + \varepsilon \geq c$, where c is the minimum value for which fundraising is reported, and zero is observed when $\beta x + \varepsilon < c$. When we use tobit to estimate the fundraising equation, we obtain the same basic findings. Also, because all expenditure variables are censored at zero, we estimate the other equations with tobit and obtain essentially the same results.

Examining the control variables in the regressions, it is interesting to note some of their effects. Firm size, measured by assets, does not appear to have a significant impact on management expense ratios. In contrast, older organizations, those that use accounting services, and those that receive government grants all appear to have slightly higher expense ratios. After controlling for these factors it appears that museums have the highest management expense ratios, on average, followed by homeless shelters and vocational training.

Previously, our model section noted the importance of the combined effects of competition and contractibility. In particular, competition has a greater effect the greater is the ability to contract on the use of donations. Recall that this holds in the model for actual perquisite consumption. It may not hold for reported administrative expenses since this includes actual expenses in addition to perquisite consumption. Also, our model has no prediction in this respect regarding fundraising expenses. Nevertheless, it is of interest to investigate the combined effects of competition and contractibility on our expenditure variables. We do this empirically by including interaction terms between the market power variables and the contractibility variable. Hence, the variables log(HHI) $\times$ TASSET, log(CR4) $\times$ TASSET, and log(FSI) $\times$ TASSET were added to the regressions shown in Table 6. The findings are reported in Table 7. If competition and contractibility are mutually reinforcing, then the interaction term in the management expenses (and its components) equation has a positive sign. This indicates that an increase in market power has a larger, positive effect on the management expenditure share when contractible inputs are more important or, conversely, greater competition has a larger negative effect on managerial expenses when contractibility is greater.

The findings with respect to MANAGEMENT and its components, COMPENSATION and OVERHEAD, are as follows. The interaction term of TASSET with each market power variable is positive and significant. Also, the direct effects of the market power variables remain positive and significant and of similar magnitudes as previously. The direct effects of the tangible asset variable are still negative, significant, but somewhat larger in magnitude than in Table 6.[22] To gain a sense of the magnitude of the interaction effect, consider the findings regarding management expenditure using HHI as the measure of market power. This is the first column of Table 7 (under HHI). A 1% decrease in HHI reduces the management expenditure share by 0.0097 if tangible assets are 1 million dollars. If tangible assets are 2 million dollars, this reduction is 0.011. Though this effect is relatively small, it is statistically significant.

Consider now the results for the fundraising variable. In these equations, the market power variable has a positive effect, the tangible asset variable has a negative effect, and the interaction term is positive. All estimated coefficients are statistically significant except for the interaction term in the specification using FSI. These results have the following interpretation. An increase in

22. The total effect of TASSET now involves the interaction term. Our computations show that the effect of TASSET is negative for all values in the sample for the specifications using CR4 and FSI and for 75% of the sample with the specification with HHI.

Table 7. Regressions of Expenditures Shares with Interaction Term

	Management	Compensation	Overhead	Fundraise
HHI[a]				
Log(HHI)	0.0083** (7.42)	0.0030** (6.08)	0.0022** (8.68)	−0.0012** (2.68)
Assets[b]	−0.0767** (4.41)	−0.0385** (4.69)	−0.0171** (3.00)	−0.0095 (0.80)
Age	0.0002 (1.53)	0.0003** (4.04)	−0.0000 (0.23)	0.0003** (5.09)
Accounting fee	0.0544** (14.01)	0.0284** (15.19)	0.0258** (20.04)	0.0105** (7.56)
Government grant	0.0389** (9.41)	0.0264** (13.75)	0.0046** (3.54)	0.0050** (3.35)
TASSET[b]	−1.050** (6.16)	−0.642** (5.00)	−0.335** (6.80)	−0.824** (4.68)
Log(HHI) × TASSET[b]	0.139** (7.42)	0.084** (5.93)	0.041** (8.40)	0.103** (5.10)
R^2	0.25	0.26	0.18	0.29
CR4[a]				
Log(CR4)	0.0816** (7.91)	0.0300** (5.64)	0.0227** (8.50)	−0.0124** (2.35)
Assets[b]	−0.0695** (4.12)	−0.0325** (4.24)	−0.0142** (2.53)	0.000 (0.00)
Age	0.0002 (1.77)	0.0003** (4.32)	−0.0000 (0.02)	0.0003** (5.48)
Accounting fee	0.0540** (13.95)	0.0280** (14.75)	0.0257** (20.21)	0.0098** (6.60)
Government grant	0.0393** (9.46)	0.0266** (13.70)	0.0047** (3.52)	0.0054** (3.44)
TASSET[b]	−0.668** (3.57)	−0.395** (3.10)	−0.216** (3.67)	−0.493** (3.03)
Log(CR4) × TASSET[b]	1.240** (4.79)	0.711** (4.03)	0.357** (4.59)	0.819** (3.43)
R^2	0.24	0.26	0.18	0.28
FSI[a]				
Log(FSI)	0.06** (4.91)	0.0115 (1.55)	0.0193** (5.70)	−0.0261** (3.25)
Assets[b]	−0.0334 (1.60)	−0.005 (0.46)	−0.0024 (0.32)	0.0352** (2.61)
Age	0.0004** (2.73)	0.0004** (4.89)	0.0000 (0.94)	0.0004** (5.46)
Accounting fee	0.0525** (12.33)	0.0266** (13.03)	0.0252** (18.43)	0.0073** (4.87)
Government grant	0.043** (10.33)	0.0293** (14.15)	0.0056** (4.24)	0.0079** (4.57)
TASSET[b]	−0.186* (1.74)	−0.095* (1.66)	−0.076** (2.14)	−0.131** (2.15)
Log(FSI) × TASSET[b]	0.455* (1.94)	0.133 (1.16)	0.118 (1.47)	0.070 (0.61)
R^2	0.23	0.24	0.17	0.27

Regressions are clustered by market; *t*-statistics are in parentheses.

[a]Market control variables (per capita income, education, unemployment, population, percent black, percent Hispanic, and average wage) as well as sector and regional dummies have been suppressed.

[b]Indicates coefficient has been multiplied by 100,000,000 for presentation purposes.

*Statistical significance at the 10% level.

**Statistical significance at the 5% level.

tangible assets reduces fundraising expenses. An increase in competition (a reduction in market power) raises fundraising expenditures. Greater tangible assets reduce the magnitude of the latter effect.[23]

23. As noted previously, we also tried our regressions with donations in the denominator rather than total revenue. The sign patterns described in Table 7 come out nearly identically. Statistical significance on the competition variable remained strong, but overall was weak for the tangible asset variable and the interaction term. However, as noted above, use of total revenue in the denominator is our preferred specification.

Table 8. Regressions with Sector, Regional, and MSA Dummies

	Management	Compensation	Overhead	Fundraise
HHI[a]				
Log(HHI)	0.006** (2.2)	0.002** (1.97)	0.002** (3.57)	−0.000 (0.65)
Assets[b]	−0.018 (1.09)	−0.017** (2.37)	0.002 (0.26)	0.004 (0.77)
Age	1.998** (1.79)	2.165** (3.80)	0.074 (0.18)	2.055** (4.94)
Accounting fee	0.051** (11.69)	0.027** (15.05)	0.026** (19.66)	0.007** (6.49)
Government grant	0.035** (7.21)	0.025** (13.65)	0.004** (3.22)	0.004** (3.24)
TASSET[b]	−0.052 (1.53)	−0.003 (0.22)	−0.046** (2.78)	−0.006 (0.67)
R^2	0.27	0.29	0.33	0.30
CR4[a]				
Log(CR4)	0.014** (3.39)	0.004** (4.09)	0.003** (5.36)	−0.001 (1.05)
Assets[b]	−0.020 (1.2)	−0.017** (2.45)	0.001 (0.22)	0.004 (0.79)
Age	1.876* (1.72)	2.124** (3.75)	0.058 (0.14)	2.062** (4.96)
Accounting fee	0.051** (11.7)	0.027** (15.08)	0.025** (19.73)	0.007** (6.52)
Government grant	0.035** (7.46)	0.026** (13.76)	0.004** (3.27)	0.004** (3.23)
TASSET[b]	−0.046 (1.40)	−0.001 (0.10)	−0.041** (2.75)	−0.006 (0.71)
R^2	0.272	0.290	0.202	0.302
FSI[a]				
Log(FSI)	0.025** (1.83)	0.000 (−0.01)	0.015** (3.61)	−0.014** (2.83)
Assets[b]	−0.017 (1.05)	−0.016** (2.33)	0.002 (0.27)	0.004 (0.81)
Age	2.200* (1.95)	2.235** (3.90)	0.119 (0.28)	2.060** (4.94)
Accounting fee	0.052** (12.2)	0.028** (15.3)	0.026** (20.09)	0.007** (6.25)
Government grant	0.034** (6.81)	0.025** (13.63)	0.004** (2.97)	0.005** (3.41)
TASSET[b]	−0.053 (1.55)	−0.003 (0.22)	−0.043** (2.78)	−0.005 (0.06)
R^2	0.27	0.29	0.20	0.35

Regressions are clustered by market; *t*-statistics are in parentheses.

[a]MSA as well as sector and regional dummies have been suppressed.

[b]Indicates coefficient has been multiplied by 100,000,000 for presentation purposes.

*Statistical significance at the 10% level.

**Statistical significance at the 5% level.

These findings, combined with the results for management expenses, allow us to draw an interesting set of conclusions. Competition evidently not only has the effect of reducing perquisite consumption, as measured by management expenses, but also tends to increase fundraising expenses. The latter suggests more nonprice competition as emphasized by Rose-Ackerman (1982), whereas the former is consistent with traditional ideas of competition reducing firm profits. In this case, the profits are in the form of perquisites. A greater importance of contractible inputs, as measured by tangible assets, causes competition to have an even stronger negative effect on perquisite consumption, but a smaller positive effect on fundraising expenses. Thus, contractibility generally has salutary effects (from the donor's perspective): it allows competition to more effectively squeeze out excess management consumption while generating a smaller increase in fundraising expenditures.

Tables 8 and 9 repeat the regressions of Tables 6 and 7 only with a set of MSA dummies replacing the variables for MSA characteristics. This is a more

Table 9. Regressions with Sector, Regional, and MSA Dummies with Interaction Term

	Management	Compensation	Overhead	Fundraise
HHI[a]				
Log(HHI)	0.005** (2.09)	0.002* (1.88)	0.002** (3.41)	−0.000 (0.64)
Assets[b]	−0.038** (2.59)	−0.021** (3.46)	−0.004 (0.65)	0.004 (0.68)
Age	1.989** (1.79)	2.163** (3.80)	0.072 (0.17)	2.055** (4.94)
Accounting fee	0.051** (12.03)	0.028** (15.16)	0.026** (20.27)	0.007** (6.49)
Government grant	0.034** (7.1)	0.025** (13.6)	0.004** (3.13)	0.004** (3.24)
TASSET[b]	−0.102 (1.59)	−0.015 (0.69)	−0.056** (2.07)	−0.006 (0.54)
Log(HHI) × TASSET[b]	0.002** (2.03)	0.000 (1.18)	0.001 (1.31)	−0.000 (0.01)
R^2	0.23	0.29	0.32	0.35
CR4[a]				
Log(CR4)	0.012** (2.97)	0.004** (3.64)	0.003** (4.36)	−0.001 (1.21)
Assets[b]	−0.053** (3.56)	−0.024** (4.12)	−0.008 (1.53)	0.001 (0.22)
Age	1.486 (1.36)	2.043** (3.63)	−0.056 (0.14)	2.027** (4.87)
Accounting fee	0.053** (13.34)	0.028** (15.43)	0.026** (22.33)	0.008** (6.63)
Government grant	0.033** (6.86)	0.025** (13.48)	0.004** (2.77)	0.004* (3.08)
TASSET[b]	−0.404** (2.35)	−0.076 (1.58)	−0.146** (2.27)	−0.038 (1.23)
Log(CR4) × TASSET[b]	0.557** (3.03)	0.116** (2.10)	0.164** (2.45)	0.049 (1.19)
R^2	0.28	0.29	0.32	0.35
FSI[a]				
Log(FSI)	0.020 (1.45)	−0.001 (0.10)	0.014** (3.27)	−0.013** (2.73)
Assets[b]	−0.041** (2.62)	−0.019** (3.05)	−0.004 (0.62)	0.006 (0.94)
Age	2.006* (1.79)	2.210** (3.87)	0.073 (0.17)	2.070** (4.99)
Accounting fee	0.053** (12.77)	0.028** (15.38)	0.026** (20.98)	0.007** (6.23)
Government grant	0.033** (6.62)	0.025** (13.57)	0.004** (2.83)	0.005** (3.44)
TASSET[b]	−0.105 (1.58)	−0.010 (0.55)	−0.056** (2.19)	−0.003 (0.28)
Log(FSI) × TASSET[b]	0.307** (2.36)	0.039 (0.95)	0.073** (1.54)	−0.016 (0.73)
R^2	0.27	0.29	0.20	0.35

Regressions are clustered by market; *t*-statistics are in parentheses.

[a]MSA as well as sector and regional dummies have been suppressed.

[b]Indicates coefficient has been multiplied by 100,000,000 for presentation purposes.

*Statistical significance at the 10% level.

**Statistical significance at the 5% level.

general way to proceed because the MSA dummies account for variation in all MSA effects. The difficulty with this approach is that inclusion of the dummies substantially reduces the remaining variation to be explained by other variables, thus potentially masking effects of interest. Comparing the two sets of tables reveals that some findings are smaller in magnitude and weaker in statistical significance, but the same basic pattern of findings emerges. The signs of coefficients are the same as in the previous tables. The market power variables are somewhat smaller in magnitude, and statistical significance mostly remains. Similarly, the coefficients on tangible assets and their interactions are somewhat smaller. Statistical significance is reduced, especially in the equations involving the compensation component of management expenses and fundraising expenses. Though the effects in these tables are not as strong,

they are broadly consistent with the previous tables and conclusions drawn from them.

4. Summary and Conclusion

This article examines the role of competition in determining the expenditure patterns of the nonprofit firm. Because of the lack of other governance mechanisms, competition is viewed by some as the primary means that induces nonprofit managers to pursue organizational goals. We also consider the ability of nonprofits to contract on the use of donations and its effects on perquisite consumption and fundraising expenses. We find that both competition and contractibility are important in determining nonprofit expenditures and that they are mutually reinforcing. Competition reduces reported administrative expenses, and this effect is stronger, the greater the ability of the firm to contract on the use of donations. Competition raises fundraising and promotional expenditures, but this effect is weaker when contractibility increases.

Contractibility is an important aspect of the nonprofit literature. The literature indicates that the nonprofit firm emerges in cases where it is difficult for the firm to contract on what stakeholders desire. This is viewed as a particular problem in charitable markets, where the donors are the main stakeholders and are not the customers or residual income claimants of the firm. Thus, it is perhaps paradoxical that nonprofits emerge when contractibility is low, but contractibility helps the competitive process for donors.

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