Intersectoral and Intertemporal Trends in competition among nonprofits

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Teresa Harrison
Associate Professor of Economics
LeBow College of Business, Drexel University
tharrison@drexel.edu

Jeremy Thornton
Associate Professor of Economics and Dwight Moody Beeson Chair of Business
Brock School of Business, Samford University
jpthornt@samford.edu
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Teresa Harrison, LeBow College of Business - Drexel University
Jeremy Thornton, Brock School of Business - Samford University
A common observation from nonprofit executive directors, board-members, and staff is that the intensity of competition for donations, grants, and skilled labor has grown over time. Practitioners complain that there are too many nonprofits or that existing nonprofits are inefficiently small. Excessive competition implies that scarce resources are dedicated to fundraising and competitive expenditures, rather than generating charitable output. In contrast, critics of the sector argue that market discipline is overly muted. Because nonprofits receive various tax subsidies and are typically funded by third parties, they argue that the natural competitive forces which promote operational efficiency are blunted.

The intensity of competition amongst nonprofits and its relative influence on firm behavior is, however, difficult to discern. In for-profit industries, it is possible to infer competitive behavior from changes in market prices. In contrast, nonprofits may offer no discernible prices. Their goods or services often trade in subsidized markets or given away for free. Without residual claimants, the incentive to engage in overtly competitive -or collusive- activities is diminished. Perhaps as a consequence, exit rates among nonprofit firms are astonishingly low (Harrison and Laincz, 2008). Furthermore, because nonprofits often create a mix of public and private goods, the welfare implications of nonprofit competition are often ambiguous. Rivalry, through fundraising, can either increase or decrease overall charitable output (Rose-Ackerman, 1982; Thornton, 2006).
This is the classic graph that depicts nonprofit sector under stress. It depicts the number of registered nonprofits against inflation adjusted donations. The graph implies a steadily increasing number of nonprofits entering the marketplace. Until roughly 2007 – 2008, donation revenue appears to keep pace with increases in the nonprofit population. However, post 2008 there is a sharp divergence between donation revenue and the growth in firms.
We examine the issue of demand for nonprofits from the perspective of donors. Our sample emphasizes donative nonprofits, so we consider factors such as population, income, and transfers as primary determinants of donative demand. The relevant question is not whether there are too many nonprofits. But rather, what is the relative growth rate between the number of nonprofits and donor demand for their services.
Is competition good or bad for the nonprofit sector? In for-profit markets we typically – though not always – think about competition being unambiguously good. More competition leads to increased efficiency and product variety, which maximizes social welfare.

The argument for too much competition specifically for nonprofits tends to rely on the excessive fundraising claim (Rose-Ackerman, 1982). The intuition is that market conditions can drive competing firms to excessively high fundraising expenditures that provide little incremental information value to donors, thereby decreasing aggregate welfare. This argument is similar to the more general model laid out in Berry and Waldfogel (1999). They point out that if entry’s main effect is to steal business from other firms, rather than expand the size of the market, then excessive entry (in terms of social welfare) can occur because too many resources are devoted to fixed costs.

In contrast, the most vocal advocates for the position of too little competition has come from the practitioner sector. The popular book by Pallotta (2008) and his subsequent TED talk advocate that nonprofits are unnecessarily passive in their fundraising. He argues that nonprofits could achieve greater scale economics by competing more aggressively, primarily by allocating more resources to fundraising. It should be noted, that his argument does not call for more nonprofits, only that those existing nonprofits should compete more aggressively. Related academic research notes that nonprofits may have similar collusive incentives as their for-profit counterparts, and should be treated similarly in anti-trust cases.

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The theoretical literature to adjudicate these competing claims remains remarkably thin. A paper focusing particularly on international NGOs by Gan & Verdier (2010) traces the contours of the issue. Gani & Verdier (2010) demonstrate how nonprofit competition be either too intense or too muted. In their model, this tends to depend on a variety of technical factors, including: the opportunity cost of fundraising, technological efficiency in fundraising, and the elasticity of substitution between different nonprofits’ output.

There is a sizable literature related to the determinants of the frequency (or density) of nonprofits in a particular area. Lecy & Van Slyke (2013) offers a recent and comprehensive review of that literature. We will refer back to this paper frequently throughout the presentation, because it offers a useful foil for where our paper differs from the Public Administration literature. Our paper also uses panel data to investigate how behavior has changed over time. This is one of the main contributions of our data and analysis.
It is difficult to think about competition directly. The concept has several elements, which can interact in non-obvious ways. Careful examination of competition first requires thinking about the relevant market. This would include both geographic and inter-firm relationships to define just who is competing with whom. Certainly the number of firms in a market, but also the degree to which their competitive behaviors are aggressive matters for competitive outcomes. It is possible for relatively few firms to be fiercely competitive, just as it is possible (though difficult) for a large number of firms to collude.

Rather than trying to detect competition (or rivalry) directly, it is more common for economists to focus on the results of competition. The most important effect of a competitive marketplace is the price-cost margin. Specifically, a lack of competition results in the ability of a firm to charge a higher price than what it costs to make the product. This represents the entire advantage to the firm for facing a lack of competitive pressures. As competitive pressures increase, the firm may either lower price or increase production (which increases costs), causing the price-cost margin to collapse. This type of analysis is captured by the Lerner index, which simply measures the price-cost margin as a fraction of price, making it comparable across firms and industries.

However, how do you think about competition when price isn’t observable? Despite an entire literature which attempts to construct or infer price, we simply don’t often observe the price of output directly in the NP sector. Just as important, we typically only observe average, rather than marginal costs on the 990. A further complication is the well know problems in measurement error on the 990 (Urban Institute, 2004). As an alternative to drawing from Form
990 financial information to deduce competitive, we attempt to infer competition from the number of organizations supported in a market. We vary market size both cross-sectionally and over time.

It is important to note that the notion of competition (i.e. the collapse of price - cost margins) has at least two dimensions. First, firms can become more aggressive by offering a lower price (or increase marketing expenditures) than is currently optimal in order to gain market share. This behavior is described as rivalrus in the economics literature. This behavior is also described as Bertrand style competition. Alternatively, competition can be increased by simply increasing the number of firms. As firms optimize price to a larger and larger number of firms, the (Nash) equilibrium price they are able to charge naturally declines. This is typically called a Cournot style competition.
The primary geographic unit of analysis in the study is the Core Based Statistical Area (CBSA), which includes both Metropolitan Statistical Areas (MSAs) and Micropolitan Statistical Areas. This paper study only includes the Metropolitan Statistical Areas (MSAs), which must contain populations in excess of 50,000 persons. The CBSA became the standard geographic terminology used by the Census after the 2000 decennial census. The census bureau defines CBSA’s as:

“Core Based Statistical Areas (CBSAs) consist of the county or counties or equivalent entities associated with at least one core (urbanized area or urban cluster) of at least 10,000 population, plus adjacent counties having a high degree of social and economic integration with the core as measured through commuting ties with the counties associated with the core. The general concept of a CBSA is that of a core area containing a substantial population nucleus, together with adjacent communities having a high degree of economic and social integration with that core.” [http://www.census.gov/geo/reference/gtc/gtc_cbsa.html](http://www.census.gov/geo/reference/gtc/gtc_cbsa.html)

Unfortunately, CBSA definitions are not static over time. It is possible, but not common, for additional counties to have been added to a CBSA unit over the course of our study frame. In 2009 there were 374 CBSA-MSAs. However, this paper will only examine those which are contained in the continental US and have existed over the entire sample window (1990 – 2005), reducing the number to 363.
Constructing the relevant economic market for nonprofit competition is a complicated task. For NP firms, the consumers of output (demand side) is likely to be distinct from the purchasers of the output (supply side). Unlike typical market structure studies, we are primarily interested in the relevant market for donations (an input) rather than the market for output. Most charitable nonprofit firms is price their output below the cost of production, consistent with their charitable mission. Consequently, we expect excess demand for nonprofit output. The binding constraint to nonprofit production will therefore be its inputs, particularly donations. Market definition will then be determined by the relevant geography over which donors are willing to consider competing charities.

We make an initial conjecture that the Metropolitan Statistical Area (MSA) represents a reasonable approximation for the donor's choice set among competing nonprofits, given the selection of nonprofit industries described next. We then construct a panel of nonprofit markets for fifteen distinct nonprofit industries in five year intervals. The four panels are drawn from the Core Files in 1990, 1995, 2000, and 2005. We infer the existence of a nonprofit from their Form 990 tax filing for a particular year.

The 15 markets are constructed based on the following criteria:

1. The nonprofit firms are headquartered within an MSA.

2. Their inputs (donations and labor) are derived locally and outputs are consumed locally.
3. The nonprofit firms contained within the two-digit sub sector are reasonably homogeneous in their outputs. Consequently, donors would likely perceive them as substitutes.

4. The nonprofit firms contained within the subsector produce output that is not substitutable with for-profit output.

5. The nonprofit firms contained within the subsector receive a non-trivial fraction of their revenues as private donations.

Each of the 363 CBSA-MSAs contain fifteen sectors, observed over four panels. This implies a total of 21,960 market observations available for the study.
Figure 2 establishes that our sample matches intuition and national trends. Over the sample range, the number of nonprofit organizations has roughly doubled in our sample markets, from 20,000 to 40,000. More importantly, the number of nonprofits per-capita has followed a similarly steep trajectory. However, other important factors such as income influence the demand for nonprofits and we control for these in our subsequent analysis. As we’ve mentioned earlier, our goal is to estimate a measure of average demand and then ask whether for that unit of demand has the number of nonprofits increased or decreased.
Figure 3 demonstrates the relative frequencies of different market structures within the sample in 2005 (the last sample frame). Despite increasing density of NP firms, over 40% of market observations have either a monopoly provider or an absence of firms in the market. Roughly 35% of sample markets contain four or more firms.
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Slide 11

We use a deliberately parsimonious set of CBSA-MSA covariates. Our goal here is to control for demand and some supply side characteristics that will affect the ability of a market to support additional NPs. Some additional variables, such as poverty rates, were highly collinear with existing covariates. Others, such as ethnic variables, were difficult to construct in the time frame for this presentation. These will be included in future iterations of the paper.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Obs</th>
<th>Mean</th>
<th>Std. Dev.</th>
<th>Min</th>
<th>Max</th>
</tr>
</thead>
<tbody>
<tr>
<td>Population</td>
<td>21780</td>
<td>630,879</td>
<td>1,461,387</td>
<td>40,013</td>
<td>18,800,000</td>
</tr>
<tr>
<td>Per Capita Income</td>
<td>21780</td>
<td>$25,359</td>
<td>$6,445</td>
<td>$12,203</td>
<td>$68,543</td>
</tr>
<tr>
<td>Personal Transfers</td>
<td>21780</td>
<td>$2,416,268</td>
<td>$6,541,270</td>
<td>$107,351</td>
<td>$122,000,000</td>
</tr>
<tr>
<td>Total Earnings</td>
<td>21780</td>
<td>$14,700,000</td>
<td>$47,400,000</td>
<td>$264,008</td>
<td>$685,000,000</td>
</tr>
</tbody>
</table>

Source: Bureau of Economic Analysis
The model regresses the number of nonprofit firms in sector \( i \) and year \( t \). The model estimates the main effects of year and a set of demographic covariates, along with their interactions. Importantly, the model estimates main and interaction effects between year and the 15 sector indicator variables. This interaction should capture most unobserved, but market specific, characteristics in the model.

Twenty percent of the sample markets have zero firms in the market. To account for the natural censoring of the dependent variable at zero, the model was estimated using Tobit. Robust standard errors, clustered around each CBSA were also used.
It’s more natural to look at predicted levels of N_hat over the years. This graph indicates that, holding all other covariates constant at their means, the average number of firms per CBSA increases in 1995, then falls back below 1990 levels. Given our basic premise that higher levels of N, ceteris paribus, implies greater competitiveness, we can say that overall competitiveness in sample markets increased between 1990 and 1995, yet fell in the subsequent decade to levels slightly below that experienced in 1990.

**It is important to note that, while the confidence intervals are marked on the chart, it is not possible to infer statistical differences between years based on those confidence intervals (i.e. we cannot say that 1995 is not statistically different from 1990, even though it appears that much of their confidence intervals overlap.**
While nonprofit density appears to have decreased over the sample time frame, we are also able to exploit cross-sectional variation in MSA size to see how changes in population influence nonprofit density within a particular year.

This table gives the partial impact of an increase in a unit of population (one person) on the fitted value of N over sample years. For example in 1990, adding one person to an MSA would, on average, increase the number of nonprofits in a market by .00000644. Note that the impact of additional population is declining over time. By 2005 adding one person would increase the number of nonprofits by only .000000701, which is not statistically distinguishable from zero.

A more intuitive way to think about the coefficients is the population increase necessary to induce an additional NP into the market. This is simply 1/B. For 1990 it required an additional 155,279 people to support an additional nonprofit. In 1995, this value increased to 178,253. At the turn of the millennium, the population necessary to support an additional nonprofit was 275,482. By 2005, the value increased to 1.42 million.
This graph combines the information between Table 4 and Table 5. YEAR changes along the front X-axis, depicting the variation in the level of N_hat (on the Z-axis) over the sample timeframe. This is the same information from Figure 4. The interpretation is as follows. The level of nonprofit density in the sample markets increases in 1995, then fall steadily thru 2005. The magnitudes of the changes are models, but statistically distinguishable from one another.

Extending the graph backwards along the Y-axis depicts how increases in population affect the fitted value of N. This is a graphical representation of the information in Table 5. As described previously, cross-sectional variation by year supports the story observed in the longitudinal analysis. From 1990 to 1995 the ability of an increase in population to support an additional nonprofit briefly increased. However, from 1995 to 2005, it began to take ever larger numbers of people to induce entry. Possible interpretations of this phenomenon are discussed in the conclusions section.

However, the ability of incremental population increases to absorb more nonprofits has declined over time. In 2005 it takes significantly larger increases in population to induce entry relative to 1990.
For the final set of results, we separate the influence of year and population by sector. It makes for a messy graph, but it’s possible to easily detect variation in patterns across NP sectors. Figure 6 depicts variation in the predicted level of $N_\text{hat}$ over time and across sectors. Note that the pattern across sectors is remarkably consistent. The exceptions to this are Food Security and Low Cost Housing. These two sectors show increases in density in the latter two panels. Alternatively, the remaining 13 sectors demonstrate a remarkably consistent pattern, consistent with the discussion on Figure 4.

It is important to distinguish what can and cannot be inferred from the graph. Figure 4 (slide 13) describes nonprofit density after demand is normalized. It indicates that viewed in this way, competition has not increased since 1990. Figure 6 indicates that this pattern is widespread across all subsectors studied. Only one of the 15 subsectors studied, Food Security, indicates having experienced increased competitive pressures over the past fifteen years.
We now have several important pieces of information to describe the competitive characteristics of the Nonprofit sector.

1. The number of nonprofits and nonprofits/per capita has nearly doubled over the fifteen year sample horizon. By itself, this result would imply increased competitive pressures.
2. Once basic demographic characteristics (Population, Income, Transfers, Total Earnings) have been accounted for the concentration of nonprofits has, on average, decreased over the sample time frame. By itself, this result would imply decreased competitive pressures.
3. Over time, larger increases in population are required to induce entry. By itself this result could imply increased competition. However, combined with the above information, it could indicate increased efficiency.

Comments on the points above:

1. Implies increased competitive pressures because it suggests the density of nonprofits has increased.
2. However, one of our main points is that the density of nonprofits is an incomplete indicator of the overall demand for nonprofits. We try to quantify the standard unit of demand for nonprofits over time, exploiting the panel nature of our data. The thought experiment we are essentially running is the following: if you took the same demand in 1995 as in 2005, how many nonprofits does it take to support that same level of demand. Our finding is that we require fewer nonprofits in 2005.
3. Why increased efficiency? We are thinking about a change in the technology production function over time such that a representative nonprofit can serve more people. This could translate into greater efficiency in the output market or our more likely conjecture is that the fundraising production function has shifted out. If we think about fundraising innovations in online donations, social media, etc., it seems plausible to suggest greater economies of scale over the last 10-15 years which is consistent with this finding. Such a trend does not necessarily imply nor deny increased competition. They could be correlated but they can also be mutually exclusive. That is, we could have increased efficiency and either increased or decreased competition.
Bibliography


