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Symposium Article

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Measuring Concentration and Competition in the U.S. Nonprofit Sector: Implications for Research and Public Policy

Abstract: In an era of dramatic financial challenges, pressure is growing for U.S. nonprofit organizations to consolidate. Yet, we know little about the current concentration of the sector and even less about the degree of competition in various nonprofit subsectors. In this paper we offer a detailed analysis of concentration patterns across the sector and analyze variations in these patterns by subsector and metropolitan areas. It is well known that measuring concentration is not identical to assessing effective competition and is but a starting point for a more thorough competitive analysis. An important distinction is made between the concentration of resources within larger subsector organizations and inequality in the distribution of resources across those organizations. Some subsectors may be concentrated yet behave competitively because resources are distributed relatively equally among several large organizations. By contrast, other concentrated subsectors may behave less competitively because resources are very unequally controlled by a few organizations. Understanding the patterns of both concentration and inequality in the nonprofit sector is likely a prerequisite to drawing defensible conclusions about the degrees of competition in the sector and the desirability of further consolidation. This analysis has implications for both public policy and philanthropy. It bears on the issues of whether antitrust policy should be forcefully applied to the nonprofit sector, whether government funding programs should encourage nonprofit consolidation or competition, and whether philanthropic institutions should implore nonprofit organizations to consolidate further or to compete more vigorously.

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1 Introduction

> "There are absolutely too many nonprofits in Charlotte" says Jennifer Roberts who chairs the commission [to identify strategies for addressing the funding losses for the Charlotte-Mecklenberg community]...County Manager Harry Jones says "As a donor, I'm going to want to know that an agency I'm giving to is not duplicating". Charlotte Observer, September 28, 2009

It is a paradox in our society that within the business sector, the virtues of competition are extolled and consolidation and collaboration viewed with suspicion, while quite the opposite seems to be true for the nonprofit sector. For example, "duplication" of services and excessive spending on fundraising and administrative costs in order to compete for charitable resources are commonly discouraged by nonprofit funders. And with some exceptions, antitrust policies do not target nonprofits.

Yet some of the same arguments for competition in the business sector would appear to apply to nonprofits. Despite the intense debates about so-called X-inefficiency and whether monopoly power is associated with less efficient and higher cost input utilization, as well as the complex considerations regarding which market structure is more likely to generate technological advances (Stigler 1976; Leibenstein 1978; Nelson and Winter 1982), there are good reasons to believe that competition encourages innovation, managerial efficiency, and cost-minimizing behavior. It helps weed out inefficient organizations. It offers choice to consumers, donors, and institutional funders. And, assuming that some nonprofit monopolies behave like their for-profit counterparts, it potentially avoids "dead-weight" losses associated with higher prices and restricted outputs. Indeed, Philipson and Posner (2009) argue that competition is beneficial even where producers' motivations are altruistic.

Competition also entails some of the same kinds of costs in the nonprofit sector that it does in business. Until inefficient competitors are weeded out and successful ones grow larger, firms may fail to exploit economies of scale and scope, resulting in more costly output. Competing firms must spend more on advertising (or fund raising costs). And consumers (or funders) are confronted with a more robust and confusing marketplace, resulting in higher search and informational (transactions) costs associated with shopping for goods and services.

In the case of nonprofits, there are also other costs of competition not normally found in the business sector. Mission benefits that take the form of public goods and externalities, or unpopular but important social objectives, might be neglected as nonprofit competitors become more focused on market rewards and economic survival. Moreover, monopoly power can give benevolent nonprofits the additional resources they need to support those public benefits (Steinberg 1993). Additionally, if nonprofits compete, they may fail to take advantage of coordination benefits that would advance their cause or serve the public at large. For example, environmental advocacy groups take substantially different approaches to promoting their causes, implicitly calculating that their combined efforts are more effective than if they failed to account for one another's activities. Finally, competitive nonprofits may become, in the public's mind, less distinguishable from businesses if they blatantly compete, thereby undermining the trust they require to attract charitable donations or even maintain their preferred (tax exempt) status in public policy.

A sound analysis of the appropriate role of competition in the nonprofit sector first requires a lucid empirical understanding of the actual levels of competition that currently exist in the sector. This in itself is a daunting challenge for a number of reasons. First, competition potentially takes place along several dimensions and in various markets. Nonprofits may compete for customers or clients in service markets, for charitable contributions among donors and institutional funders, for workers in various labor markets (including the market for volunteers), and for public attention through various media markets (Kearns 2006). The size and scope of these markets may vary, even for a particular nonprofit, which may, for example, seek national funding to serve a local clientele.

Second, the geographic scope of nonprofit markets is not transparent. Many nonprofits operate locally – say within metropolitan areas – while others compete nationally or internationally. Specifying market reach is fundamental to measuring the degree of actual competition in any given nonprofit field. Third, nonprofits may compete with one another along various dimensions including the price and/or quality of their services, the particular market niches they may seek to serve, and the "message" they seek to convey to their publics – each suggesting different measures of competition or concentration.

In the present paper, we focus on a cross-section of nonprofit service fields and measure the degree of concentration in these fields, for selected U.S. metropolitan areas, under the assumption that metropolitan areas are the likely market areas for these services. We focus on measures of expenditures that reflect levels of service and the overall resources that a nonprofit commands and use these to construct market level HHIs and Gini coefficients. Although we cannot draw conclusions as to the benefits and drawbacks of competition, an initial analysis of current market conditions is necessary to further discussion on this issue.

2 Previous research

The research literature on competition and collaboration in the nonprofit sector is relatively sparse, especially in the area of empirical studies. A number of scholars, including Eckel and Steinberg (1993), Steinberg (1993), Irvin (2007, 2010), Kearns (2006), and Philipson and Posner (2009), have written descriptive and theoretical pieces, generally making the case that the importance of competition in the nonprofit sector is understated and sometimes undervalued. For example, Kearns (2006) notes that nonprofits compete with one another (and with for-profits and government) for market shares in their service markets, for charitable resources, for visibility and credibility, and for talent in labor markets. Irvin (2010) argues that nonprofits are sometimes pressured, e.g. by funders, into collaborative or consolidated arrangements that can be inefficient, and that the benefits of competition among nonprofits often go unrecognized. Philipson and Posner (2009) demonstrate mathematically that competition even among altruistic producers can yield net social benefits by avoiding dead-weight losses associated with limiting output.

At the same time, there are special arguments for consolidation and collaboration in the nonprofit sector that would not apply to business. Collaborative arrangements among nonprofits that yield “gains from trade” can allow nonprofits to operate more efficiently by reducing costs, gaining revenue from underutilized assets, reaching larger markets, mitigating destructive effects of competition, and offering greater influence in the public policy arena. Along similar lines, Eckel and Steinberg (1993) note that benevolent nonprofit monopolies can use their market power to generate resources to serve public needs (externalities) that the marketplace or government would not otherwise address.

A more common line of research addresses competition between nonprofits and business in so-called “mixed industries”. For example, as reviewed by Schlesinger and Gray (2006), there have been many studies comparing costs and quality of care between nonprofits and for-profits in the hospital and nursing home industries. There has also been considerable theorizing about the composition of mixed industries, and indeed why they exist, as reviewed by Brown and Slivinski (2006). Recently, Bowman (2009) has synthesized a new framework based on the cost-advantages of nonprofits vs for-profits in markets for different types of goods and services.

However, relatively few studies examine the competitive structure within nonprofit industries or the nonprofit segment of mixed industries. Exceptions include Seaman's (2004) analysis of the arts which questions the norm of the nonprofit performing arts as "near natural monopolies," and Feigenbaum's (1987) study of U.S. medical research charities which finds that increased market concentration undermines funding for research projects and increases discretionary spending. This suggests real potential benefits of nonprofit competition. An obvious connection between these streams of research is whether the market presence of for-profit competitors influences the competitive/collaborative structure within the nonprofit segment of an industry. No studies to date have specifically addressed this question beyond the important issue of whether mergers among nonprofit hospitals deserve less antitrust scrutiny than in the case of for-profit hospitals, given the reality that many antitrust markets for hospital care will include both forms of organization (Searing 2013).

The present study is the first to examine the competitive structure of the nonprofit sector over a broad cross-section of nonprofit industries. Competition in the nonprofit sector has at times been examined with virtually no focus on structural characteristics (e.g. Ritchie and Weinberg 2000), and as fully conceded below, market structure is an ambiguous predictor of "effective" competition. We start with the very basic and modest goal of description – to what extent are the activities and resources of nonprofit industries highly concentrated in relatively few organizations (e.g. monopoly, oligopoly) vs widely distributed among many (potentially competitive) organizations? In the next section we consider the ways in which subsector/industry concentrations can be measured and the conceptual issues underlying the choices of measures, the definition of industries, and the scope or expanse of markets in which organizations are assumed to operate. After that, we describe our dataset, including the selection of industries and metropolitan areas we examine, and the particular measures of activity and resources we analyze. Next we offer our results based on sorting our industry-metro area observations into high and low concentration categories and examining patterns and outliers.

Since measures of industry concentration do not unambiguously translate into indications of competition, and since it is not yet clear whether competition is healthy or unhealthy for nonprofits in particular circumstances, we refrain at this stage from making any specific recommendations for public policy or philanthropic practice. However, we conclude the paper with some implications for the future research agenda on nonprofit competition and the potential policy relevance of our findings in today's economy of governmental austerity and the relative decline of philanthropy as a source of financial support for nonprofit organizations.

3 The role of market structure in competitive analysis

The description of market structure is an essential step in the analysis of the competitive behavior and performance of any industry. While strict "structuralism" was largely a descriptive/empirical phase in the development of industrial organization contributing to the common terms "structure, conduct and performance" as ways to organize information about any particular sector of the economy, the more controversial view that "bad structure" automatically created anticompetitive conduct and inefficient market performance has long been viewed as too simplistic, and in particular was strongly challenged by the "Chicago-school" of industrial organization.[1] That market structure is but one among a number of key factors to consider in evaluating the extent of effective competition in any sector of the economy is clear in the approach taken in the United States (and in most countries enforcing antitrust laws) to the evaluation of horizontal mergers. Discussion of *Joint Horizontal Merger Guidelines* is located in Appendix A. The most popular measure of structure is the Herfindahl–Hirschman Index (HHI) which is defined as the sum of the squared market shares across the entire universe of firms viewed as being part of the relevant market, with values measured in whole numbers from 0 to 10,000. The current guidelines suggest that a market with HHI less than 1,500 is "unconcentrated" while an HHI of greater than 2,500 is highly concentrated (replacing an older 1,982 standard of 1,800).

Essentially, a highly concentrated market structure is at best a necessary, but hardly a sufficient condition for finding credible evidence of anticompetitive behavior and inefficient market performance. Furthermore, inefficiency itself has multiple dimensions and can be measured as the existence of "dead-weight welfare losses" linked primarily to reduced output and higher prices (i.e. "allocative inefficiency"), as a waste of productive resources via rent seeking to generate artificial market power, leading to inefficient "rent dissipation" (e.g. Wenders 1987), or as production inefficiency due to the use of inappropriate input combinations, excessive "shirking," inadequate methods of contract enforcement, or general organizational "slack" (i.e. the "X-inefficiency" issue noted above). One might also identify consumer losses stemming from an inadequate array of product options (i.e. sub-optimal product diversity), although this might be viewed as part of a reduced output as incorporated into allocative inefficiency, if output is defined in both quantity and quality dimensions (or as "quality adjusted" output, where measured output quantity is unchanged, but quality deteriorates in some measurable way). And to reiterate an earlier point, it is very possible that high concentration may generate positive externalities for nonprofit markets (Eckel and Steinberg 1993) Therefore, it is clear that our attempt to clarify the structural characteristics of various categories of nonprofit sector activity is an essential first step, but is part of a larger and more complex research agenda.[2]

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[1] Of course, the Austrian School concept of competition as a dynamic process rather than an equilibrium result is inherently more hostile to structural interpretations of competition and even critical of the Chicago approach to the analysis of competition (e.g. see Armentano 1999).

While our investigation defines the market area as Metropolitan Statistical Areas (MSAs) to reflect the presumption that effective competition among nonprofit entities primarily occurs in localized settings, the specific use of MSA data is more a convenience than the result of any sophisticated "market analysis." Also, at this stage of our analysis, we are using aggregations of nonprofit organizations using the NTEE A–Z classification system, aggregating nonprofits into 26 general subsectors (see the more detailed description of the data in Section 4). Thus, our product and geographic markets that are essential for the measurement of market structure are not the result of any sophisticated analysis using either critical loss analysis and the SSNIP test (small but significant nontransitory increase in price) cited in the *Joint Horizontal Merger Guidelines*, or the "shipments" test suggested by Elzinga and Hogarty (1973) designed to measure the degree of imports into and exports out of defined regions. Given the special complexity of pricing data in the nonprofit sector, other types of “pattern analysis” such as an investigation of pricing relationships would be even more challenging than analyzing shipments in this context (Coate and Fischer 2008 provide an excellent review of actual market analysis performed within the Federal Trade Commission).

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[2] While it is useful to refer to antitrust standards as helpful benchmarks for evaluating competition in the nonprofit sector, historical antitrust challenges in nonprofit settings are relatively rare. Important exceptions include the price fixing/collusion case against Ivy League colleges and universities (*U.S. vs. Brown University et al.*, 1993), often called the MIT Financial Aid case since only MIT challenged the initial consent decree with the U.S. Justice Department that characterized information sharing among nonprofit schools in the determination of financial aid packages as a violation of Sherman Act Section 1. There have also been a number of controversial merger cases involving nonprofit hospitals (e.g. *U.S. vs. Carilion Health System*, 1989). The most famous antitrust case involving the arts did not involve nonprofit organizations (the collusion investigation of art auction houses Sotheby's and Christies that led to substantial fines and jail time for one administrator). There was also an FTC investigation of the music promotion policies of Warner Communications Inc., involving recordings of world famous opera tenors Luciano Pavorotti, Jose Carreras, and Placido Domingo (with striking media headlines of "FTC Alleges Price-Fixing of Tenors"), but this also was about for-profit activities.

The use of MSAs as a localized market definition is common, and the American Medical Association used just such a market definition in its study of health insurance market concentration (2007), which found (among other things) that in the HMO product market, 99% of the 309 sampled MSAs are highly concentrated. Yet, the MSA definition of a local market has limitations that might even be exacerbated in the case of certain nonprofit sectors. For example, the Atlanta MSA is actually Atlanta–Sandy Springs–Marietta and extends over 28 separate counties. The New York MSA covers parts of New Jersey and even a county in Pennsylvania. It is no doubt far better to define the geographic market at the MSA level in contrast to the national or state level, but we are still using quite large geographical areas that suppress many even more localized plausible market areas. While it is true that organizations like the American Cancer Society and the American Red Cross compete for funds over many different MSAs and states and are certainly national organizations, we limit our data (see Section 4) to organizations that are unaffiliated with larger networks in an effort to focus on the delivery of services to constituent groups who are typically served by nonprofits in localized markets. Also, one can imagine a hypothetical theater that is uniquely capable of touring nationally and hence operating in many MSAs, but would still compete for theater goers at the local level, where it would confront many purely localized theater companies. Furthermore, it is recognized that the market for clients/customers can potentially differ from the market for funding.

While the HHI is by far the most common metric used in the initial “structural screening” of mergers, collusion, predation, or any other potential antitrust challenge, it is not the only possible measure. In fact, the simplest measures have always been concentration ratios, typically a CR4 defined as the summation of the market shares of the largest four firms (although 2 firm and 8 firm ratios have also been common). One alternative measure used in this paper (although not common in antitrust analysis) is the Gini coefficient (C), which is a measure of inequality or statistical dispersion commonly used to measure the degree of income or wealth inequality within a population. The statistic arises from the use of a Lorenz curve, a cumulative distribution function that ranks observations from smallest to largest and plots the percentage of resources controlled by segments of the population. While the mathematical formula is somewhat complex, the Gini coefficient is designed to capture the degree to which an actual distribution differs from the 45-degree line (equal distribution) case. Higher Gini values indicate greater inequality. Examples of Gini coefficients for income inequality include a value of 0.386 for the U.S. in 1968 compared to 0.47 in 2006, and compared to 0.33 for the European Union in 2005, and values exceeding 0.60 for Brazil and about 0.55 for Mexico (derived from U.S. Census Bureau and United Nations publications).

Despite the absence of a significant role for Gini coefficients in standard antitrust analysis, the case of a market being characterized by high HHI concentration but limited inequality among those firms is an important one in industrial organization. For example, Kwoka (1979) has argued that a market characterized by three equal-sized firms generates notably lower prices and higher outputs than a market with only two equal-sized firms (both cases having high HHIs but zero Gini coefficient values), and he most fundamentally argues that concentrated markets will perform much more competitively when the third firm gains market share relative to the largest two firms, even when overall concentration remains relatively high (see the Appendix surrounding Table 8 for more on this case). This, of course, would be a case of a high HHI, but a declining degree of inequality (lower Gini coefficient).[3] Therefore, we supplement the HHI measure of market concentration with the Gini measure of firm inequality in an effort to capture a more complex array of competitive possibilities.

High concentration is defined herein as an HHI of >2,500, which is consistent with the new 2010 merger guideline standards for "highly concentrated" markets; also, a high degree of inequality is defined as a Gini coefficient >0.75, although this is a less well-defined standard in this market structure context. (In the traditional income inequality context, the highest Gini was 0.658 for Seychelles based on World Bank data, with other sources reporting a few 0.65 values for other countries.) Table 1 provides various hypothetical examples of the generic cases of high/high, low/low, high/low, and low/high (including a moderate/moderate case) that would be reflective of those standards for defining high concentration and high inequality. Some cases are easy to envision. For example, the two high/high cases are relatively straightforward and understandable. Also, the most extreme of the exhibited low/low cases (low/low (1)) is hardly shocking. Moving through those four low/low examples is useful, however, to see how one moves gradually toward our threshold borderline case HHI = 2,500 and Gini = 0.50. (See also the moderate/moderate case in the table.) The two high/low cases are important, and the first of those (3,333, 0) is the important Kwoka case of high concentration but no inequality.[4] By far the most problematic regarding an intuitive understanding is the low/high case,

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[3] Standard oligopoly models (by definition dealing with "few" firms and hence relatively high market concentration) in microeconomic theory generate a variety of market results ranging from pure monopoly linked to collusion to purely competitive results linked to "Bertrand" behavior, with "Cournot interaction" generating results that are increasingly competitive when both the number of firms increases and the degree of inequality among them declines (with inequality typically linked to differences in costs, with the lowest cost firm being the largest). The dominant firm price leadership model portrays the case of a clearly dominant lower cost price-setting firm constrained by fringe firms of potentially varying sizes, with the implication that increases in the output capacities of such fringe firms (with one case being a reduction in the gap between the largest and smallest firms, i.e. reduced inequality) will lead to increased market output and lower prices.

An especially interesting antitrust case in the spirit of this model was the proposed 2001 merger (ultimately blocked) of baby-food producers Heinz and Beech-Nut, who argued that even though such a merger would reduce the number of major baby-food manufacturers from three to two, the increased strength of this resulting second firm would be capable of constraining the market power of the clear dominant market leader, Gerber (see the further discussion in the Appendix related to Table 8).

Table 1: Illustrative hypothetical examples of generic cases

Concentration/inequality	Industry description: Firm shares	HHI	Gini
High/high (1)	1 firm = 73%; 9 firms = 3% each	5,410	0.63
High/high (2)	1 firm = 55%; 39 firms = 1.15% each	3,077	0.53
Low/low (1)	40 firms = 2.5% each	250	0
Low/low (2)	1 firm = 30%; 140 firms = 0.5% each	935	0.29
Low/low (3)	1 firm = 41.5%; 39 firms = 1.5%	1,810	0.39
Low/low (4)	1 firm = 44.0%; 400 firms = 0.14%	1,944	0.44
High/low (1)	3 firms = 33.33% each	3,333	0
High/low (2)	1 firm = 55%; 1 = 25%; 1 = 20%	4,050	0.23
Moderate/moderate	1 firm = 44.6%; 280 firms = 0.1978%	2,000	0.44
Low/high*	1 firm = 44.65%; 10,000 = 0.0055%	1,994	0.45

Notes: *The Gini coefficient is very insensitive to further increases in the number of very small firms while holding the dominant firm at a market share sufficiently low to maintain an HHI of <2,000, not to mention a standard of HHI <2,500. For example, the result was very similar to that of 3,000 small firms and a dominant firm of 44.60%. For a discussion of how our data can generate non-hypothetical cases of very low HHI and very high Gini results, see the discussion below regarding the arts category in New York in footnote 5 (also footnote 3).

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[4] Also linked to the common observation that markets for various city-pairs of passenger airline service can be brutally competitive even with as few as two strong airlines, e.g. Delta and Air Tran (now part of Southwest) in Atlanta for various specific city-pair markets.

which as shown below represents the majority of the cases reported in this preliminary study. When envisioning a hypothetical case with reasonably low concentration (defined here as <2,000 which was more lenient than the 1982 standard of 1,800 for high concentration, but not as lenient as the current 2,500 benchmark), but high inequality, it is very difficult to generate that case having also a Gini coefficient >0.50. This is noted in Table 1, but the specific circumstances in which this can happen are described in the context of the nonprofit data in Section 5 (and footnote 3).

Despite the nuances of the various cases of high and low concentration and equal or unequal distribution, the different combinations signify distinctly different kinds of market structure that we also find in our nonprofit data below. The conceptual distinctions are summarized in Table 2.

Table 2: Alternative market structures

	High inequality (high Gini)	**Low inequality (low Gini)**
High concentration (high HHI)	Monopolistic	Oligopolistic
Low concentration (low HHI)	Dominated	Atomistic

From Table 2 we can appreciate that there are essentially three types of markets in which firms (nonprofits) can be said to potentially compete – (1) the classical *atomistic* market where firms are numerous and small; (2) the *oligopoly* where several large firms may compete against one another; and (3) the *dominated market* wherein many small firms with a relatively large combined market share potentially compete against one another and with one or a few large ones. The dominated market can be competitive because some of the small firms may find a way to distinguish themselves and grow larger and provide more constraints on the dominant firm, or because there are several relatively large firms competing against one another, or for both reasons.

4 The data

To assess the degree of market concentration and distribution of resources within the nonprofit sector, we use nonprofit filings for the 2010 fiscal year. Records were taken from both the 2010 and the 2011 Core Files from the National Center for Charitable Statistics. In the case that an organization filed for fiscal year 2010 in both datasets, data from the more recent 2011 Core Files are used.

The dataset contains financial information on 245,898 unaffiliated charitable 501(c)(3) organizations that filed Form 990 with the IRS, a requirement for all nonprofits with revenues exceeding $25,000 except churches.

While there are other standard sources of data on "Establishment and Firm Size" related to the nonprofit sector, such as Department of Commerce (U.S. Census Bureau) publications that report tables entitled "Concentration by Largest Firms for the United States: 2002" (reporting data on the number of individual establishments linked to the largest 4, 8, 20, and 50 firms, with data also reported for revenues, payrolls, and number of paid employees), those publications do not provide data below the national level, and there are no HHI values reported, as are reported by contrast by the Census Bureau for the for-profit manufacturing sector (the source of the HHIs reported in Table 3).

We limited our analysis to nonprofit organizations that are unaffiliated with larger networks and examined each of the 25 NTEE categories (A–Y) (excluding the twenty-sixth, miscellaneous) in the nation's 20 largest MSAs. This yielded a dataset of 103,842 organizations grouped into 500 MSA*NTEE groups. All results that follow are built upon two calculations for each MSA*NTEE group, the HHI concentration index and the Gini inequality coefficient.

To calculate the HHI index, we first totaled expenditures by all nonprofits within each NTEE category and MSA. For example, we added the reported expenditures of all Arts nonprofits within the New York MSA. This was repeated for each category within each MSA (i.e. for each of the 500 MSA*NTEE groups). Then we divided each nonprofit's total expenditures by the corresponding sum for the respective category and MSA to obtain that particular nonprofit's share of total expenditures. These proportions were multiplied by 100, squared, and then summed by category and MSA to obtain the HHI for expenditures. Note that the HHI ranges from 0 to 10,000, but that the minimum for any sector is a function of the number of firms (10,000 divided by the number of firms). The Gini coefficient, used to assess the equality of resource distribution, was then calculated. Again, we evaluated each NTEE category within each of the 20 MSAs separately.

5 Findings and interpretation

In the first stage of analysis, we compare the market's HHI relative to the 2,500 "highly concentrated" merger review threshold used in the private sector. In addition, we further classified data according to the Gini coefficient. Gini coefficients below 0.5 indicate a reasonable level of equality. Gini coefficients greater than 0.75 are considered "unequal" and Gini coefficients between 0.5 and 0.75 represent markets with "modest" unequally distributed market shares. The percentage of observations falling into each category is presented in Table 3 while categories are classified according to their average HHIs and Ginis in Table 4.

Table 3: Classification of market concentration and equality – aggregated data

	Unequal distribution (Gini coefficient > 0.75)	**Modest distribution (0.5 < Gini coefficient < 0.75)**	**Equal distribution (Gini coefficient ≤0.5)**
Concentrated markets (HHI > 2,500)	106 21.2% (Monopoly)	14 2.8%	12 2.4% (Oligopoly)
Less concentrated markets (HHI < 2,500)	266 53.2% (Dominated)	96 19.2%	6 1.2% (Atomistic)

Table 4: Classification of market concentration and equality based on category averages

	Unequal distribution (Gini coefficient > 0.75)		**Modest distribution (0.5 < Gini coefficient ≤ 0.75)**
Concentrated markets (HHI > 2,500)	*Medical Research* *Food, Agriculture, and Nutrition* *International, Foreign Affairs, and National Security*	*Science and Technology* *Public and Societal Benefit*	*Social Science* *Mutual and Membership Benefit*
Less concentrated markets (HHI ≤ 2,500)	*Arts, Culture, and Humanities*	*Crime and Legal Related*	*Housing and Shelter*
	Education	*Employment*	*Public Safety, Disaster Preparedness and Relief*
	Environment *Animal-Related*	*Youth Development* *Human Services*	*Recreation and Sports* *Civil Rights, Social Action and Advocacy*
	Health Care	*Community Improvement and Capacity Building*	
	Mental Health and Crisis Intervention	*Philanthropy, Voluntarism, and Grantmaking Foundations*	
	Diseases, Disorders, and Medical Disciplines	*Religion-Related*	

The majority (53.2%) of market areas (defined by MSA and NTEE category) and NTEE categories (14 out of 25) fall into the *dominated* category of less concentrated (or unconcentrated) but unequal distribution. Mathematically, this can occur when there are a large number of nonprofits within a particular MSA that file under a single NTEE category, even when a relatively small percentage control a significant share of the market. For example, 2,792 nonprofit arts organizations in the New York MSA filed Form 990 for fiscal year 2010. The top 10% (279 organizations) accounted for 89.54% of all expenditures in this market area, with the largest four nonprofits comprising almost two-fifths (39.22%) of the market's size. Because so many organizations are included in the top 10%, it is not surprising to find a low HHI score of 774 as we do in this particular case. With 90% of organizations contributing just over 10% of market expenses, however, the inequality of resource distribution is very high.[5]

The next largest segment of markets is those with unequal distributions and concentrated *monopolistic* markets. This group generally includes those markets with fewer nonprofit organizations and dominated by the largest nonprofits. Environmental nonprofits in St Louis are one example. There are only 31 organizations with the largest 4 controlling 87.5% of the market and the single largest nonprofit accounts for 79.5% of all expenditures during the 2010 fiscal year. The resulting HHI of 6,354 and Gini coefficient of 0.88 suggest that the market is concentrated and resources are not distributed evenly. Even with a relatively high Gini threshold of 0.75, the relative prevalence of this case may be the most striking result. It is surprising to find more than 20% of our cases revealing such potentially “problematic” structural characteristics if nonprofit organizations fail to act benevolently. A narrowing of the product or geographic market definition is almost guaranteed to further increase measured concentration. Our future efforts to investigate the implications of using narrower NTEE subcategories (e.g. “food banks and pantries” rather than “food, agriculture and nutrition”) would be expected to uncover many more of these highly concentrated cases, although the implications for the effects on the Gini measure of inequality are less predictable. While data availability limitations make it very difficult to try to utilize smaller geographical market definitions than MSAs, such narrowing of the geographic market would also be expected to increase measured concentration, with less certain effects on inequality.

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[5] Nevertheless, the case of very high Gini coefficients and very low HHI values can be somewhat counterintuitive. For example, this New York arts case, where the largest 1.0% of 2,792 organizations controls 66.1% of the market, is fully consistent with those 28 organizations each having market shares no higher than 2.36%. Since the next 28 largest firms have a combined roughly 8.4% of the market, that result is consistent with individual market shares of 0.3% each. This implies that the remaining 2,736 organizations have a combined market share of 25.5%, or a mere 0.009322% market share per organization. Using those simplifying assumptions consistent with but not identical to the New York arts case (i.e. it ignores the fact that the top four organizations, 0.14% of all organizations, control 39% of the MSA market), the resulting HHI is 158.7, but the Gini coefficient falls only to 0.73 from its actual case of 0.92. That is, we get a Gini value of 0.73 even though in this simplified variation of the New York arts case, the highest individual organization market share is only 2.36% held by the top 28, followed by a group with 0.3% each, and finally by the vast majority with 0.009322%. While obviously this implies that the largest organization is 253.2 times larger than the smallest firm (2.36%/0.009322%), the extremely small absolute sizes of any of these market shares can deceptively lead one to doubt that the degree of inequality in such an industry could ever be as high as that measured by the Gini coefficient of 0.81. By contrast, note that the last hypothetical case generated in Table 1 was only able to yield a Gini coefficient of 0.45 even when the largest firm had a market share of 44.65% while the 10,000 smallest firms had market shares of only 0.0055%. "Naïve" inspection would suggest that such a market would be inherently much more "unequal" than the non-hypothetical New York arts case. Of course, that Table 1 case does have a much higher HHI at 1994 than the New York arts.

Few nonprofit markets exhibit more equal distributions of resources, represented by Gini coefficients less than 0.5. Of the 18 markets that do, 6 are in less concentrated *atomistic* markets and 12 in *oligopolistic* markets viewed as more concentrated. These markets are those with the fewest organizations that most resemble oligopolies in the private sector. All but one market (Pittsburgh – Public Safety) have fewer than 25 organizations, with the majority in single digits. Six of the twelve *oligopolistic* markets that are concentrated but have a more equal distribution of resources belong to one NTEE category, Social Science. Houston provides an interesting example with three nonprofits filing Form 990s during 2005. The largest of these nonprofits, the Center for the Study of Natural Systems and the Family, controls 50.8% of all resources. While the smallest, The Parents of the Academy of Science and Technology, spends only 9.8% of the almost $100,000 of all expenditures in the market. The result is an HHI of 4,229 that approaches this market’s minimum of 3,333 (10,000 divided by the number of organizations, 5) and a Gini coefficient of 0.27. Of course, as with any of our cases summarized in Table 2 and elaborated upon in Table 3, a narrowing of the market definition would be expected to generate additional cases of at least higher HHI measured concentration with less clear implications for measured inequality.

The smallest *atomistic* category, less concentrated and more equally distributed resources, is likely the one seen as most favorable in the private, for-profit sector. Only six markets fit this category: two in Pittsburgh (Public Safety and Civil Rights), Environment in Miami, Social Science in Atlanta, Environment in Tampa, and Membership/Mutual Benefits in Minneapolis. The number of nonprofits in this category ranges from 8 to 102. Public Safety in Pittsburgh is the largest of these markets in terms of the number of filing nonprofit organizations. The largest 10% of firms account for 35.8% of all expenditures, leaving almost two-thirds of the market to 90% of organizations. The largest four organizations control 19.3% of expenses, and thus we calculate an HHI of 204 and a Gini of 0.47. This is an interesting result in that the prototype textbook case of a highly competitive market is exactly this case: very many similarly small (hence low inequality) firms with very low concentration. This is an especially notable result since the relatively broad product and geographic market definition was likely to overstate the prevalence of this case. Narrower market definitions would be very unlikely to expand the number of cases falling into this textbook competitive structure.

Although mean and median Ginis for each category are never below 0.5, 22% of the NTEE categories fall into our modestly distributed groupings with Gini coefficients between 0.5 and 0.75. Table 5 summarizes our measures by NTEE category, providing more detail than the classification in Table 6. As expected from the oligopolistic category, the Social Science markets and the Mutual and Membership categories are more modestly distributed and more concentrated than most of the other NTEE categories. The categories of Housing and Shelter, Public Safety, Recreation and Sports, and Civil Rights and Advocacy all have similar distributions of expenses but are less concentrated based on their HHIs.

Data are further disaggregated in Table 6. In this table, we are confronted by the variation in classification of the geographic regions for each NTEE category. In some instances, such as the Arts, all markets are similarly categorized. In other words, the Arts markets in all 20 metropolitan regions are characterized as possessing low concentration but high inequality (Dominated). Other categories vary considerably across regions. For example, consider the Crime and Legal Related markets. In this case, 30% of markets are relatively *atomistic*, 30% are *dominated*, and another 35% are *monopolistic*.

The last stage of this analysis examines whether metropolitan areas are similar in their nonprofit market characteristics. Again, we find striking differences across regions. A description of our findings is located in Table 7.

We find that the nature of the nonprofit environment differs across metropolitan areas. For example, in Atlanta and Phoenix, a third of all markets are Monopolistic, whereas only one market in Philadelphia and two in Washington DC/Baltimore fall into this category. Minneapolis and Pittsburgh, however, have many relatively atomistic markets. These are intriguing differences, and further research on geographic differences is warranted.

The above tables all present data using a classification scheme based on the HHI and Gini coefficient values exceeding or falling below thresholds established in the private for-profit sector (the HHI) or being plausible on theoretical grounds as applied to this analysis (the Gini). Figure 1, however, presents our

Table 5: More detailed sector description

Category		Average for the NTEE category	Median for the NTEE category
Arts	Gini	689.95	689.92
	Herfindahl	0.86	0.87
Education	Gini	1,349.20	912.74
	Herfindahl	0.92	0.93
Environment	Gini	2,013.43	1,386.45
	Herfindahl	0.79	0.79
Animal	Gini	2,143.32	1,820.07
	Herfindahl	0.85	0.84
Health	Gini	1,104.79	745.33
	Herfindahl	0.91	0.91
Mental Health	Gini	957.13	711.87
	Herfindahl	0.80	0.81
Diseases	Gini	1,284.95	866.93
	Herfindahl	0.82	0.82
Medical Research	Gini	2,925.95	2,380.63
	Herfindahl	0.82	0.85
Crime	Gini	1,429.80	1,360.71
	Herfindahl	0.79	0.78
Employment	Gini	1,966.77	1,380.05
	Herfindahl	0.77	0.80
Food	Gini	3,210.77	3,212.97
	Herfindahl	0.85	0.86
Housing	Gini	542.83	371.10
	Herfindahl	0.72	0.72
Public Safety	Gini	2,220.12	1,208.05
	Herfindahl	0.69	0.69
Recreation	Gini	708.51	505.27
	Herfindahl	0.74	0.73
Youth	Gini	1,121.79	887.20
	Herfindahl	0.78	0.79
Human Services	Gini	362.73	240.15
	Herfindahl	0.84	0.83
International	Gini	2,873.56	1,910.63
	Herfindahl	0.87	0.90
Civil Rights	Gini	1,973.32	1,609.79
	Herfindahl	0.68	0.68
Community Improvement	Gini	1,216.05	838.17
	Herfindahl	0.82	0.82
Philanthropy	Gini	1,627.96	1,479.56
	Herfindahl	0.89	0.90
Science/Technology	Gini	5,242.59	5,243.47
	Herfindahl	0.83	0.86
Social Science	Gini	4,443.41	3,917.77
	Herfindahl	0.60	0.62
Public Safety	Gini	4,006.22	4,430.14
	Herfindahl	0.81	0.84
Religion	Gini	851.31	674.88
	Herfindahl	0.79	0.79
Mutual/Membership	Gini	5,928.39	6,377.73
	Herfindahl	0.68	0.80

Table 6: Intra-NTEE category distribution

Category	Concentrated/unequal *Monopolistic*		Less concentrated/unequal *Dominated*		Concentrated/equal *Oligopolistic (relatively)*		Less concentrated/equal *Atomistic (relatively)*	
	HHI > 2,500 Gini > 0.75		HHI < 2,500 Gini > 0.75		HHI > 2,500 Gini < 0.75		HHI < 2,500 Gini < 0.75	
	Count	**Percentage**	**Count**	**Percentage**	**Count**	**Percentage**	**Count**	**Percentage**
Arts	0	0	20	100	0	0	0	0
Education	4	20	16	80	0	0	0	0
Environment	4	20	11	55	0	0	5	25
Animal	4	20	16	80	0	0	2	10
Health	1	5	19	95	0	0	0	0
Mental Health	2	10	16	80	0	0	1	5
Diseases	3	15	14	70	0	0	3	15
Medical Research	1	5	14	70	1	5	4	20
Crime	7	35	6	30	1	5	6	30
Employment	7	35	12	60	1	5	0	0
Food	13	65	6	30	0	0	1	5
Housing	0	0	5	25	0	0	15	75
Public Safety	4	20	0	0	1	5	15	75
Recreation	1	5	8	40	0	0	11	55
Youth	1	5	13	65	0	0	6	30
Human Services	0	0	20	100	0	0	0	0
International	8	40	11	55	0	0	1	5
Civil Rights	3	15	2	10	1	5	14	70
Community Improvement	2	10	17	85	0	0	1	5
Philanthropy	3	15	17	85	0	0	0	0
Science/Tech	13	65	3	15	2	10	2	10
Social Science	5	25	2	10	10	50	3	15
Public and Society	10	50	3	15	1	5	6	30
Religion	0	0	16	80	0	0	0	0
Mutual/Membership	9	45	3	15	7	35	1	5
TOTAL	106	21.20	266	53.20	26	5.20	102	20.40

Table 7: Distribution of markets across classifications by MSA

% NTEE categories in each classification ($N = 25$)	**Concentrated/unequal** ***Monopolistic***		**Less concentrated/unequal** ***Dominated***		**Concentrated/equal** ***Oligopolistic (relatively)***		**Less concentrated/equal** ***Atomistic (relatively)***	
	HHI > 2,500 Gini > 0.75		**HHI < 2,500 Gini > 0.75**		**HHI > 2,500 Gini < 0.75**		**HHI < 2,000 Gini < 0.75**	
MSA	**Count**	**Percentage**	**Count**	**Percentage**	**Count**	**Percentage**	**Count**	**Percentage**
Atlanta	9	36	10	40	0	0	6	24
Boston	7	28	13	52	0	0	5	20
Chicago	6	24	18	72	0	0	1	4
Dallas/Ft Worth	7	28	15	60	0	0	3	12
Denver	5	20	11	44	2	8	7	28
Detroit	5	20	12	48	2	8	6	24
Houston	4	16	14	56	2	8	5	20
Los Angeles	4	16	17	68	0	0	4	16
Miami	5	20	6	24	10	40	4	16
Minneapolis	3	12	13	52	0	0	9	36
New York	2	8	21	84	0	0	2	8
Philadelphia	1	4	19	76	0	0	5	20
Phoenix	8	32	13	52	2	8	2	8
Pittsburgh	5	20	9	36	1	4	10	40
San Diego	7	28	10	40	2	8	6	24
San Francisco	4	16	16	64	0	0	5	20
Seattle	7	28	12	48	1	4	5	20
St Louis	7	28	9	36	2	8	7	28
Tampa	8	32	8	32	2	8	7	28
Washington/Baltimore	2	8	20	80	0	0	3	12
Total count	106	21.20	266	53.20	26	5.20	102	20.40

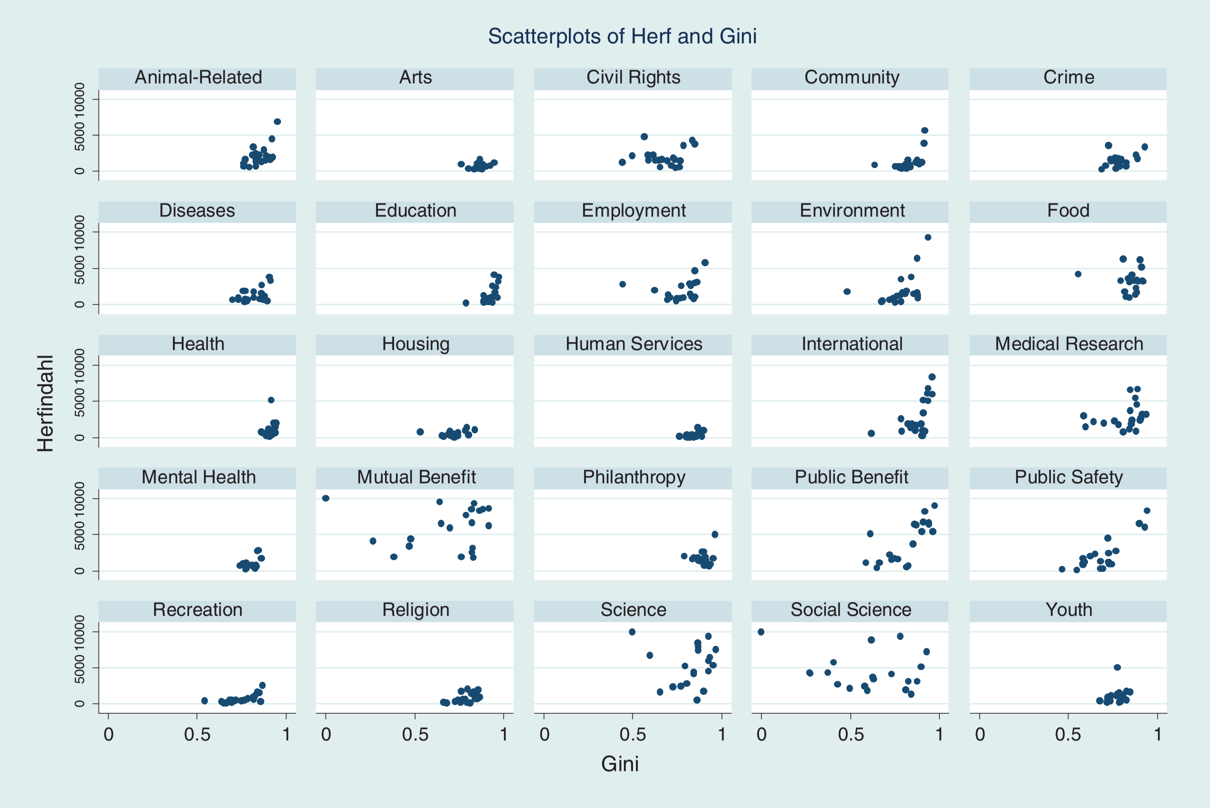

Figure 1: HHI and Gini coefficient scattergram by categories
Source: National Center of Charitable Statistics.

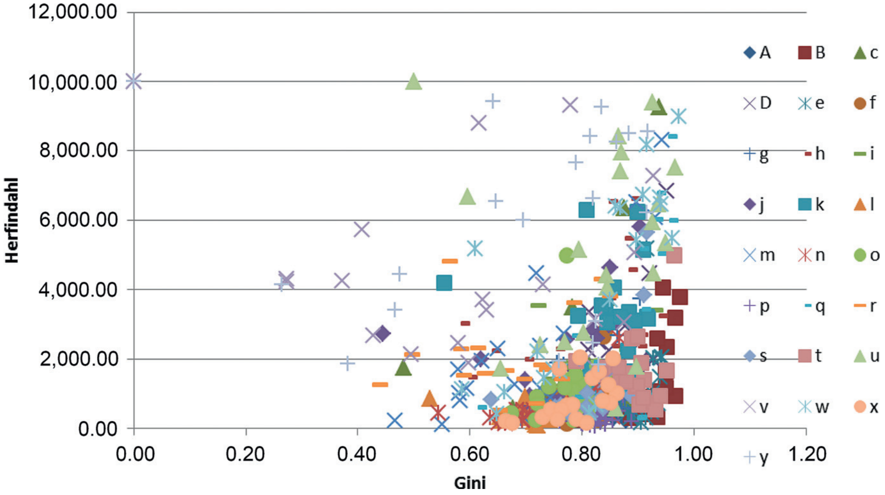

Figure 2: HHI and Gini coefficient scattergram (aggregated)

data graphically so we can see more clearly whether a relationship exists between concentration (HHI) and the distribution of resources (Gini) within a market without any *a priori* thresholds being identified.

While not a perfect correlation, it appears that greater HHI values are correlated with greater Gini coefficients, and this relationship is clearly stronger in some NTEE categories than others. This suggests that the more concentrated a market, the less equally resources are distributed within this market. Figure 2 also reveals the frequency of markets with HHI much greater than 2,500. Consider the category of Mutual/Membership. Four of these markets displayed some of the lowest Gini coefficients (below 0.5), while a different seven Mutual/Membership markets had some of the highest HHI (greater than 8,000). MSA markets in this category are generally comprised of relatively few nonprofits (ranging from 1 to 53, with 13 of the 20 markets at or below 10 firms), and yet these markets differ in an important dimension. Some of these markets are dominated by one (or two) organizations, while in others the few nonprofits that exist are much closer in size to one another. Mutual/Membership shows much greater variation than a category like Food and Nutrition, despite the 65% vs. 30% split for food (and nutrition) between the concentrated versus less concentrated markets for the unequal case, and the 0% versus 5% split between concentrated and less concentrated markets for the equal case (see Table 6). The variance of HHI scores for Membership and Mutual Benefit organizations is 3.5 times that for food markets, and the variance in Gini coefficients is almost 10 times greater.

In addition to the HHI and Gini coefficient, we consider two alternative measures. The first measure examines the ratio between a market's actual HHI and minimum possible HHI (equal to 10,000 divided by the number of firms). This measure is uncorrelated with the HHI and moderately correlated (0.4) with the Gini coefficient. The minimum HHI is also subject to some of the same criticisms as the HHI, particularly that of market definition. While we contend that the MSA is an appropriate geographic boundary, the use of NTEE categories may be broad, and as such, it overstates the number of organizations within a truer market. A systematic over-counting of firms decreases the minimum and hence increases the ratio, ceteris paribus. Because of these conceptual ambiguities, the potential novel use of the HHI ratios as an alternative measure to the actual HHI is not compelling, pending further review of how those weaknesses might be addressed. It is an interesting metric that captures a potentially important phenomenon, but we believe that the expansion of the traditional HHI measure of concentration (which has a well-understood set of standards) to include also the Gini coefficient measure of inequality of resources should remain the focus of our analysis.

We also calculated a normalized HHI for each of our markets. In this case, we took the difference between the HHI and the minimum possible HHI for a market and then divided this by the difference between 10,000 and the minimum HHI. For example, if an industry with four firms has an HHI of 7,500 and the minimum possible HHI is 2,500, the normalized HHI equals (7,500–2,500)/(10,000–2,500), or 0.66. The correlation between the normalized HHIs and our previous HHIs was 0.96. As with the other HHI calculations, it remains susceptible to market definition. As such, we continue to use the original measure as this more closely resembles that used by the FTC in the current *Joint Horizontal Merger Guidelines*.

6 Summary, policy issues, and future research

A research agenda aimed at a systematic examination of the relative merits of competition vs cooperation in the nonprofit sector is naturally ambitious. The results reported herein do not try to address those fundamental relative merits, since the focus in this part of that research agenda is primarily descriptive. What do we know about concentration within the nonprofit sector? Since little is known about even this threshold question, it is important to first attempt to systematically provide data about standard measures of concentration such as the HHI, supplemented by measures of inequality such as the Gini coefficient. But even an accurate description of these important structural characteristics is itself insufficient to determine the actual degree of effective competition, since high concentration is a necessary but not a sufficient condition to a finding of substantial market power and insufficiently rigorous competition. The additional factors identified in Section 2, at least related to entry conditions, would be important to further examine the state of competition within the many different parts (subsectors) of the nonprofit sector.

These initial efforts utilized a convenient, but clearly simplifying assumption, that the geographic market should be defined as the MSA. Not all relevant markets are localized, and there have been many for-profit antitrust investigations that have found (after careful analysis) relevant regional, national, or even international markets.[6] Similarly, we suggest that a significant portion of the nonprofit sector operates in a relatively local area.

So the MSA is a defensible starting point, but since MSA boundaries are quite broad, they may in fact be broader than what would be found with a more systematic application of either the SSNIP (optimal cartel or hypothetical monopolist) test or the Elzinga-Hogarty "shipments" type tests of regional imports and exports. To the extent that geographic markets for the NTEE categories examined herein are indeed narrower, we would expect to see even more concentration, and potentially but not necessarily more inequality than we have reported here. We are confident that further work to at least selectively utilize less aggregated nonprofit sector definitions will generate even higher measured concentration than reported in Tables 3–7. Given the potential bias toward excessively broad markets in this analysis, it is very notable that we have found almost 30% of our markets as being *monopolistic* i.e. both highly concentrated and with highly unequal resource distributions among firms. And finding less than 1% of our cases to reflect the textbook case of pure (*atomistic)* competition is also a striking result.

Finally, despite our numerous caveats regarding the translation of our preliminary research exploration here into guidance for public policy, our findings offer some hints for concern and for the support of future research. First, it is clear that we have identified what looks to be a fairly highly concentrated nonprofit sector, or more accurately we have found many nonprofit subsectors to be concentrated and potentially uncompetitive, at least by business sector structural standards. This in itself should prompt government to invest in research to further explore the relationships between efficiency and effectiveness of nonprofits, the concentration of their markets, and the levels of competition resulting from different levels and patterns of nonprofit market concentration. If future research finds that such concentration minimizes effective competition *and* if lack of competition is found to undermine efficiency in some parts of the sector, then a number of public policy questions will need to be addressed: Should federal antitrust policy be applied more vigorously in concentrated nonprofit markets? Should governments tailor their grants and contracts to give smaller nonprofits easier access? And should tax policy encourage donations to smaller nonprofits especially in markets where contributions are more highly concentrated than expenditures? For these reasons, we believe the descriptive data summarized in this paper provide a springboard for a plethora of important research to follow.

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[6] But some of those investigations have indeed found localized markets, and few would deny that products like ready-mix concrete, or grocery stores are localized.

Appendix A

The Horizontal Joint Merger Guidelines, used by the Federal Trade Commission and the Antitrust Division of the U.S. Department of Justice, stress six factors in evaluating such mergers.

(1) The definition of a relevant antitrust product and geographic market, since descriptive data like market shares and various measures of concentration cannot be generated without knowing which firms to target in such calculations.

(2) The level of seller concentration given those market definitions, with various theoretical justifications leading to the most popular measure being the HHI defined as the sum of the squared market shares across the entire universe of firms viewed as being part of the relevant market (with shares measured as whole numbers like 15, rather than 0.15, and values hence ranging from 0 to 10,000, usually reported without commas). These U.S. *Guidelines* have recently changed from their long-standing 1982 levels and in any case were always interpreted quite flexibly. The latest 2010 version identifies a market with a post-merger HHI of less than 1,500 as being "unconcentrated" (replacing a standard of 1,000). By contrast, a post-merger HHI of greater than 2,500 (if accompanied by a change in the HHI due to the merger of between 100 and 200 or more) is viewed as "highly concentrated" (substituting for the earlier 1,800 and a change of only 100). Such highly concentrated cases "potentially raise significant competitive concerns and often warrant scrutiny," although of course heightened scrutiny does not automatically translate into a formal challenge, and not all challenges lead to court ordered "preliminary injunctions" or eventual full trials on the merits. The latest intermediate case of a "moderately concentrated" market has a post-merger HHI between 1,500 and 2,500, if it also

involves a change in the HHI of greater than 100. Regardless of the post-merger HHI, any merger causing an HHI change of less than 100 is “unlikely to be challenged.” As noted by Kwoka and White (2009, 19), “rarely have mergers in post-merger markets with an HHI of less than 2000 been challenged, and mergers with substantially higher post-merger HHIs have also escaped challenge.” In their latest edition (Kwoka and White 2014, 21) they repeat this observation and further note that it “remains to be seen” whether these new [2010] thresholds will prove a more accurate guide to actual enforcement.

(3) The nature of interaction among the market firms (e.g. the kind of oligopoly “game” being played) so as to determine the likelihood of either “coordinated behavior” among firms that could increase price and reduce the quantity and/or quality of output, or “unilateral” behavior by the dominant firm (typically the firm created by a merger) that could yield higher prices and reduced output (or slowed technological change and other negative effects).

(4) Conditions of entry into the relevant market, i.e. the extent of entry barriers and entry lags.

(5) Other characteristics of a market that might simplify or complicate the use of market power, such as the extent of “countervailing” buyer market power, the homogeneity or heterogeneity of the products, the similarity or differences of the production and cost functions of the competing firms, as part of a longer list of market characteristics that serve as “screens” for evaluating the severity of the anticompetitive threat.

(6) The credibility of any merger specific cost savings, quality improvements, or enhanced dynamic productivity increases that might outweigh the potential increase in market power created by a merger.

Appendix B

Table 8 provides specific hypothetical examples evaluating the possibility that effective competition might exist in a market characterized by high concentration but a rising market share of either the second firm (the so-called HB case named for the Heinz–Beech-Nut case discussed above) or a rising market share and increasing strength for the third firm (the so-called Kwoka hypothesis). The main message from the hypothetical examples provided in Table 8 is the inherent difficulty in relying solely on statistical measures such as the HHI or the Gini to capture these more complex increasing competition cases. That is, for both the HB hypothesis and the Kwoka hypothesis, the allegedly greater

Table 8: Illustrative hypothetical examples of the “Heinz–Beech-Nut (HB)* and Kwoka hypotheses”** (HHI vs Gini variations)

(Case) Initial Industry Market Shares	Initial HHI/ Gini	New Industry Market Shares: “HB Case”*	New HHI/ Gini	Initial vs New: Change HHI/Gini
(1): 60, 20, 15, 5	4,250/0.425	60, 35, 2.5, 2.5	4,838/0.513	+/+
(2): 60, 20, 15, 5	4,250/0.425	55, 25, 20	4,050/0.233	–/–
(3): 60, 20, 15, 5	4,250/0.425	48, 48, 4	4,608/0.293	+/–
(4): 60, 20, 15, 5	4,250/0.425	50, 22, 7 with 4	3,096/0.529	–/+
		“Kwoka Case”**		
(5): 50, 50	5,000/0	33.33, 33.33, 33.33	3,333/0	–/0
(6): 60, 30, 5, 5	4,550/0.475	60, 30, 9, 1	4,581/0.495	+/+
(7): 60, 30, 5, 5	4,550/0.475	50, 30, 20	3,800/0.20	–/–
(8): 60, 30, 5, 5	4,550/0.475	75, 15, 10	5,950/0.433	+/–
(9): 50, 50	5,000/0	40, 30, 20, 10	3,000/0.25	–/+
(10): 60, 30, 5, 5	4,550/0.475	58, 32, 8, 2	4,456/0.480	–/+

Notes: *Baby-food manufacturers Heinz and Beech-Nut defended their proposed 2001 merger on the grounds that only a significant improvement in the strength of the second firm in markets clearly dominated by Gerber could stimulate effective competition even though the number of firms fell from three to two. See Baker (2009). **Kwoka (1979, 1984) argued that increases in the market share of the third largest firm relative to the two largest firms is especially important to generating more competitive results. The simplest example is that three equal-sized firms are argued to be more competitive than two equal-sized firms (see Case (5) in the table).

competition arising from a strengthening of the second firm or the third firm is fully consistent with every possible variation of a change in the HHI and the Gini. That is, four cases are provided in Table 8 where the second firm becomes stronger in the “New Industry” column vs the “Initial Industry” column, with those four cases representing each of the variations of both HHI and Gini increasing (+/+), both decreasing (–/–), HHI up but Gini down (+/–), and HHI down but Gini up (–/+). The same is shown via six rather than four examples regarding the strengthening of the third firm (the Kwoka case). This evidence reinforces the earlier point that to accurately investigate the strength of the competitive interaction among the firms/organizations in a given market, one cannot rely solely on statistical measures of market structure, even if those measures are necessary starting points.

Of course, if one finds consistent evidence that in a defensibly defined product and geographic market there is very low concentration (HHI) and very low firm inequality (low Gini), it would be extremely difficult to envision a situation in which such a market could be yielding non-competitive outcomes, and the presumption would be very strong that such a market is highly competitive. In such a case, there is no need to investigate all of the other complicating factors identified above; the market structure test would almost certainly be a reliable "screening device." The Table 8 ambiguities arise in those much more complex settings where one might observe high concentration, but that evidence alone would not be sufficient to conclude that firm behavior was yielding a non-competitive market performance.

To further understand the analysis in the text, Tables 9 and 10 document other benchmarks from which to view those findings. Table 9 reports selected examples of various HHIs from the for-profit sector, at the national level for the year 1997. Table 9 might be referred to light of the selected text Tables 6–8 examples from the nonprofit sectors at the MSA level to see a case from the for-profit world where an HHI was 658, or 2,025. Table 10 provides further context for the nonprofit results by describing various fairly recent antitrust monitoring or merger investigations. One conclusion from Table 10 is again that the presumed rigor of competition is only imperfectly captured by structural measures alone. For example, the Oracle-PeopleSoft merger was allowed even with post-merger HHI values >4,000 (for two different product market definitions), while an electricity wholesaling merger was effectively blocked with post-merger HHIs in the 2,000–2,500 range. The most "logical" case was the satellite television case, where the merger was blocked due in large part to the very high post-merger HHIs (>5,000 for two differing market definitions), although there was a very rigorous defense provided by the merging parties, and the analysis extended well beyond market concentration issues alone.

Table 9: Real examples of for-profit manufacturing HHI concentration measures (Year 1997: Assumed National Market)

Industry	HHI	Industry	HHI
Sawmills	87	Computers	658
Folding paperboard boxes	246	Male suits and coats	846
Book printing	364	Distilleries	1,076
Meat products	393	Refrigerators/Freezers	2,025
Petroleum refining	422	Breakfast Cereal	2,446

Note: Original source: Census of Manufacturing: Concentration Ratios in Manufacturing (2001, Table 2); adapted from Carlton and Perloff (2005, Table 8.3).

Table 10: Selected real examples of for-profit concentration measures (antitrust investigations in varying geographic markets)

Industry/Year/Case	Market	HHI data	Result
Electricity wholesaling/ 2004/PSEG – Exolon merger	PA, NY, MD, DE, VA (East market)	Post-merger range of 2,057–2,492	Merger voluntarily dropped after regulatory challenge
Enterprise software design/2004/ Oracle-PeopleSoft	USA for FMS (financial services) and HRM (human resource management	Post-merger FMS: 4,027 Post-merger HMS: 5,607	Federal judge refused to enjoin merger after challenged by U.S. (DOJ) and 10 states. Merger finalized
Coal/2004/ Arch –Triton	Northern Wyoming	Post-merger "capacity": 2,346 Post-merger "reserves": 2,103	Federal judge refused to issue preliminary injunction after U.S. (FTC) challenge. Merger finalized.
Ethanol/2006–2007/ Ongoing FTC monitoring	USA for comparison years 2006–2007	Capacity for marketers: 995–670 Production for marketers: 1,345–1,155	FTC found industry not concentrated and becoming less concentrated between years 2006 and 2007
Satellite TV/2002/ Echo-Star-DirecTV	Local markets based on cable franchises; product = multi-channel video programming	Median post-merger for many local areas: 5,653 (6,693 with no analog)	Merger abandoned after challenged by U.S. (DOJ and FCC)

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