5-1-2008

Determinants of the Non-Profit Sector Size: Cross-Countries Empirical Analysis

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Honors Paper

Macalester College

Spring 2008

Title: Determinants of the Non-Profit Sector Size: Cross-Countries Empirical Analysis

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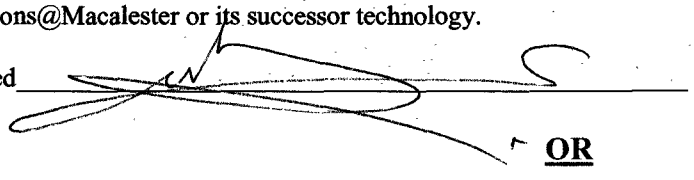
Signed 

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DETERMINANTS OF THE NON-PROFIT SECTOR SIZE: CROSS-COUNTRIES EMPIRICAL ANALYSIS

Senior Honors Thesis

Department of Economics

Macalester College

May 5, 2008

By Subechya Shrestha

Advisor: Prof. Pete Ferderer

Readers: Prof. Raymond Robertson and Prof. David Blaney

Abstract

The majority of studies on the growth of the nonprofit sector have focused only on the demand for nonprofit organizations. This paper attempts to understand the factors that create a demand for and supply of nonprofit organization. We cannot explain the recent increase in the number of nonprofits between countries without understanding the supply factors that facilitate or hinder their formation and operation. I examine the size of the nonprofit sector in 31 countries using supply side variables (government support, legal institutions and social capital) and traditional demand side factors (religious fractionalization, income per capita and government expenditure).

Acknowledgements

This paper could not have been completed without the help of certain professors and friends. I would like to thank my advisor Prof. Pete Ferderer for patiently listening to me and for all his insights; Prof. Raymond Robertson for making me remember that I panic every time before getting to the right place and finally Prof. David Blaney for teaching me how to think and write. Thank you all for answering late night emails and never ending stream of questions.

The encouragements from Melissa French, Zack Devlin-Foltz, Aminata Sougou and Jane Kollasch helped me keep going for a year. Thank you Melissa for listening to my endless small sample issues, Aminata for taking study breaks with me and Zack for accompanying me for my first ever all nighter. Their input and that of the entire honors class was indispensable. Finally, biggest thanks for my papa for providing me the needed inspiration and my mama for praying for me everyday.

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I. Introduction

The invisible hand is the first fundamental theory of welfare economics. In a perfectly competitive market with perfect information, demand meets supply and equilibrium is attained. But, work by Pigou (1932) and others have established that equilibrium is generally inefficient if some goods are not produced, or are not traded (Steinberg, 1991). These failures limit the role of the market and create a potential role for government and nonprofits.

The nonprofit sector as an economic force is a new phenomenon. The study of the nonprofit sector is fairly new but its importance is growing as this sector expands its role and influence in developed and developing countries. As its influence in the market grows, we need to know what is driving this growth. It is important to understand this growth because it will help us recognize the factors that hinder and facilitate nonprofit formation. Researchers have explored the origin and role of this sector in various ways. Some have looked at the relationship between the government and nonprofit sectors (Abrams and Schmitz, 1986; Matsunaga, 2001; Steinberg, 1991; Salamon et al, 1994); others have looked at the factors that drive the need for nonprofits in an economy (Corbin, 1999; James, 1992; Marcuello, 1998; Rose-Ackerman, 1996) and still others look at both the demand for and supply of nonprofits simultaneously (Ben-Ner and Hoomissen, 1991, 1992; Ben-Ner, 1986).

One of the biggest limitations in the study of the nonprofit sector has been the shortage of data. The majority of empirical studies have focused on the United States because of data availability. A recent attempt to collect data on this sector outside of

United States has been under taken by the Johns Hopkins Comparative Nonprofit Sector Project. The data are not ideal; the number of observations is low and data are missing for some of the variables that other studies find to be important. At the present, however, they are the only cross-country data available.

There are two main categories of theories that explain the growth and role of nonprofits: demand and supply theories. Demand-side theories attempt to understand the growth of nonprofits in terms of their varying relationship with the government. Demand theory consists of two groups – theory of excess demand and contract failure. The theory of excess demand states that the present output of a good or service (by for-profit firms and the government) is insufficient and nonprofit firms fill in the gap. Most studies point out that population heterogeneity causes the excess demand. A diverse population has different demands for goods/services and the government is unable to satisfy the diverse demand. Contract failure occurs when there is asymmetric information regarding the goods or services. When consumers cannot evaluate the quantity and/or quality of a good or service, they opt for a supplier that they consider 'trustworthy'. Nonprofit arise to fill this void.

Supply-side theory addresses the costs involved in the formation and operation of nonprofits. This theory points to the role of: government policies and legal environment in the formation of nonprofits. Government support through subsidy and tax deductions reduces a nonprofit's operation costs and induces increased supply. The legal environment consists of policies that hinder or facilitate a nonprofit's ability to secure legal status.

Salamon et al (1994) and Matsunaga et al. (2002) used an older version of the Johns Hopkins data focusing only on demand factors. They empirically tested whether government spending affected the level of nonprofit sector activity. Their results were inconclusive[1]. In contrast research has not explored the supply-side determinants of nonprofit growth.

The aim of this paper is to empirically explore the demand and supply factors that stimulate or limit the growth of nonprofits in education and health. I use the most recent cross-country data from the Johns Hopkins Comparative Nonprofit Sector Project. It is important to conduct a large-scale cross-country analysis for two reasons. First there is a lack of large-scale studies examining demand and supply factors simultaneously. Secondly, it is important to understand the dominant factors that have contributed to the proliferation of nonprofits over the past two decades, as increasingly more financial and human capital are invested in this sector.

The paper is structured as follows. The next section provides a brief discussion of the structure and role of nonprofit organizations. The following section summarizes the principle studies. The fourth section will describe the main demand and supply side theories. The fifth sections present the data, empirical analysis and reports results. Finally, the conclusion summarizes the main results and implications of the paper.

II. Nonprofit organizations

The United Nations Inter-agency Committee on Integrated Rural Development for Asia and the Pacific (1992) identifies six criteria for an organization to be classified as a

[1] Salamon et al (2000) finds demand heterogeneity to have inconclusive effect to the size of the nonprofit sector.

nonprofit. These are as follows: nonprofits are voluntary, not-for-profit, service and development orientated, autonomous from the government or political parties, have a high degree of motivation and commitment, and have some form of formal registration. This definition presents a very broad and general view of what constitutes a nonprofit.

Nonprofits operate almost exclusively in service industries, where they often co-exist with for-profit and government organizations (Ben-Ner and Hoomissen, 1991). One of the key characteristics of nonprofits that make them possible suppliers for particular types of goods/services is the "Non-distribution-of-profit constraint." Unlike for-profit firms, nonprofits need to distribute their surplus by increasing the quantity, quality and variety of services they provide. The "owners" of nonprofits do not receive financial gain even if the organization makes a profit. This constraint reinforces the view that nonprofits are trustworthy, helping them attract donations.

Nonprofits have three main sources of revenues: donations from private groups or individuals, subsidies from the government and fees they charge for their services. Among the three groups of service supplier (for-profit, government and nonprofit) the nonprofit form is the most likely to receive donations. For-profits are profit driven; donations will only increase their profits. If government receives donations, donors fear, they will reduce their own expenditure, leaving services provided and taxes unchanged.

Government support to nonprofits arises for various reasons. In some cases it might be due to government failure, which is discussed later in demand theory. Constitutional constraints might also prevent the government from providing services that are highly demanded. For example, certain populations may demand religious education but due to constitutional constraints, the government cannot favor one religion over

another. However, governments may subsidize nonprofits by awarding grants or tax deductions.

Finally, the third type of revenue source for nonprofits is the fee they generate through their services. Generally nonprofits provide more than one type of service. The multiple production process enables nonprofits to provide a service or services that are highly subsidized or free. Cross-subsidization involves providing a service or services that earns a profit and using that profit to provide service(s) where they incur losses. Researchers (Rose-Ackerman, 1996; Marcuello, 1998) have given the example of private universities that operate as nonprofits. Universities make profits from undergraduate tuition. The number of students enrolled in the undergraduate level is high and the revenue they generate exceeds their costs. The university then invests these profits at the graduate level, where the cost per student is high because the number of graduate students is low. Thus, we see nonprofits making profits in one or more of their services and investing that profit to subsidize a service(s) where the costs are high or which is geared towards consumers who are unable to pay.

III. Literature Review

The empirical studies of Ben-Ner and Hoomissen (1991, 1992), James (1992) and Abzug and Turnheim (1998) analyze demand and supply factors simultaneously in predicting the growth of the nonprofit sector. These studies use different data sets: Ben-Ner and Hoomissen (1992) and Abzug and Turnheim (1998) use U.S state level data, although the former concentrates only on the state of New York. James (1992) uses

cross-country data for primary and public schools. These studies also differ in focus. Ben-Ner and Hoomissen (1991) focus on factors that explain why organizations take nonprofit form. Abzug and Turnheim (1998) explore which set of factors, 'government and market failure' or 'policies affecting the legitimacy of the organizational form,' have more explanatory power regarding the growth of nonprofits. James (1992) examines the factors that have led to rise of private-school enrollment (both private and nonprofit schools are lumped together) in developing countries relative to developed countries. Even though the focus and the data sets are different, each study emphasizes the need to incorporate supply side variables in studying the growth of the nonprofit sector.

Supply-side variables

Ben-Ner and Hoomissen (1992) argue stakeholders' characteristics are the main determinants for nonprofit demand and supply. These characteristics are: the mean and variance of income, population heterogeneity and education. They emphasize that consumers of nonprofit services have to play an active role in the supply. The main supply factor that determines if a nonprofit will be formed or not depends upon the consumers' ability to form a cohesive group. Ben-Ner and Hoomissen (1992) argue that wealthier and better-educated people have the resources needed to form nonprofits. They have human capital and access to financial markets to form and operate nonprofits. Both education and income are predicted to positively correlate with nonprofit size.

Abzug and Turnheim (1998) argue that the main determinant of the supply of nonprofits is the legal policies that *legitimize* or *delegitimize* different organizational structures. They predict that new nonprofits will form only when nonprofits are viewed

as legitimate organizations. The proxies used in the study to measure the legal environment of each U.S state are – *legislative legitimation*[2], *judicial legitimation*[3] and *level of nonprofits incorporated.* The third variable measures the number of nonprofit firms already operating within each state. Each of the supply side variables is predicted to positively correlate with the nonprofit growth.

Finally, James (1992) argues the supply of nonprofits is determined by cultural heterogeneity and government subsidies. He expects government subsidies to positively effect nonprofit size. Due to the lack of actual data on this variable, he tests the correlation in terms of a dummy. Cultural heterogeneity in terms of language and religion create diverse demand and supply functions. He argues that where there is a religiously diverse population, religious members form nonprofits as a mechanism to maximize membership or faith. He predicts cultural heterogeneity as both demand and supply factor, both positively influencing the nonprofit size.

Demand-Side variables

There are more similarities between the studies on the factors that lead to the demand for nonprofits. Ben-Ner and Hoomissen (1991) and Abzug and Turnheim (1998) support the Weisbrod (1988) theory of government failure as the major determinant for nonprofit demand. The proxies used to measure the aggregate demand and government failure are different. Ben-Ner and Hoomissen (1991) argue that the higher the number of lower income population, the higher the demand will be for nonprofits. Another demand

[2] This variable identifies the number of years prior to 1990 during which a state had enacted a nonprofit incorporation law.

[3] Number of lawsuits decided by state courts by the state attorneys general concerning nonprofit organizations.

side variable is population heterogeneity. A diverse population in terms of religion, language and ethnicity is predicted to create a variety of demand functions.

Abzug and Turnheim (1998) measure government failure (which creates potential role for nonprofits) in terms of the fiscal health of the local government and the safety of the state. Municipal bond ratings measure the fiscal health of the state government and are predicted to be negatively related to the increase in the number of nonprofits. They expect the government and the nonprofit sector to be substitutes. Population heterogeneity, crime rates, unemployment rate and poverty rate measure the diverse demand of the population.

James (1992) uses per capita income and a dummy for separating developed from developing countries. Both variables are treated as the indicators for gross demand for nonprofits. He expects developing countries to have lower public spending, which generates excess demand.

Empirical Findings

Table 1 summarizes the result of the three studies. The table shows, the majority of the variables are statistically insignificant.

Table 1: Empirical results from previous studies

Author	Dependent Variable	Demand	Effect	Supply	Effect
Abzug and Turnheim (1998)	The increase in the number of 501 ©(3) organizations	Race	(*)	Legislative Lgetimation	(*)
		crime rate	(+)	Level of nonprofits incroporation	(+)
		unemployment	(*)		
		Poverty rate	(*)		
		Moody's bond rating	(*)		
Ben-Ner and Van Homissen (1992)	Employment in Nonprofits	Education		Social Cohesion- Church density	
		Education	(+)	Education	(+)
		Health	(*)	Health	(*)
		%Poor			
		Education	(*)		
		Health	(-)		
		Income			
		Education	(*)		
		Health	(-)		
		Race			
		Education	(+)		
		Health	(*)		
James (1993)	Relative size of private educational sector in a country	Government expenditure as a proportion of GDP	(-)	Religion	(+)
				Language	(*)
				Government Subsidy	(*)
		Income per capita	(-)		
		Gini coefficient	(*)		

(+) positive effect, (-) negative effect, (*) not statistically significant (10%) or less

All the studies use OLS as their estimation technique. The empirical results of all three studies are different, which is not surprising considering the different proxies each study has used. Abzug and Turnheim run three OLS models: first consisting of only supply variables, second with demand factors and finally a simultaneous model. In their final model the legal environment variables are insignificant. The only supply side variable significant is the number of nonprofits already in existence, which as predicted is positively related to the number of nonprofits. For the demand factors, they only find crime rate variable significant and positively related.

James (1992) empirical results support that both low government spending and cultural heterogeneity of the population is positively associated with the nonprofit size. But, when analyzing developed and developing countries separately, he finds excess demand stemming from low public spending to be a major factor for nonprofit sector size

in developing countries, whereas differentiated demand stemming from cultural heterogeneity is the major determinant of the variation of nonprofit size given the level of development.

The results of these studies are inconclusive because of the lack of statistical significance of most variables. The studies are similar in terms of the theoretical reasoning behind the growth of the nonprofits. The theory of this paper synthesizes some of the proposals of these studies and adds new components that other, qualitative literatures on the topic deem important.

IV. Theory

Demand-side theory deals with the conditions that lead consumers to opt for nonprofits as suppliers. Supply-side theory consists of factors that influence the operation and formation of nonprofits.

a. Demand theories

Three types of failures lead to demand for nonprofits: market failure, contract failure and government failure. Markets fail to provide adequate quantities of goods/services, government provide the goods in accordance with the wishes of the electorate and those who want higher levels of service than the government provides support nonprofits (Steinberg, 1991).

i. Market Failure

One of the causes for market failure has to do with the nature of the good or service itself. Samuelson (1954) defined pure public goods as goods or services that are both nonrival (consumption by one person does not diminish any other person's consumption of that good) and non-excludable (keeping some individuals from consuming the good is costly or impossible once it has been produced). As the main objective of for-profits is to maximize profits, they fail to provide goods that have the non-rivalry and/or non-excludable component. For-profit firms do not produce public goods because consumers have the motive and opportunity to consume them without paying (Steinberg, 2006).

Health and education have a large and expensive-to-produce non-rival components (Ben-Ner and Hoomissen, 1991). For example there is huge capital investment required to set up a school buildings and equipment, and to hire teachers. But, once it has been established, adding a few more students to a classroom does not present extra cost. But, in a market with for-profits, they do not want to lose revenue from potential consumers thus they ration the quantity. The market generally under-provides this type of good.

ii. Asymmetric Information

A second source of market failure arises if there is asymmetric information, also known as contract failure. Three major situations in which symmetric information arises to the disadvantage of consumers are (1) when there is a lag between the time of purchase and the time when the good can be evaluated; (2) when the payer of the service and the

beneficiary of the same service are different individuals and (3) when the service is complex and its precise characteristics are difficult to evaluate by consumers (Ben-Ner and Hoomissen, 1991).

For services where the for-profits have asymmetric information favoring them, they have the opportunity and incentive to cheat the consumers in quality, quantity or both. In response, consumers demand organizational forms for which profit maximization is not the main objective. As noted earlier, nonprofits are regarded as trustworthy due to the non-distribution-of-profit constraint. They become the more desirable supplier of such services.

iii. Government failure

In this paper, government failure is understood in terms of the inability of the government to fulfill the excess demand of the market. The first response to market failure comes from the government. To solve under-provision, governments either directly provide the goods using taxes or pay a private-sector firm to produce them (contracting out) (Steinberg, 2006). For example, governments pay private for-profit firms to build transportation infrastructure such as highway or airports. Market failure due to over-exclusion (no access to non-payers) can be solved in variety of ways. The government can mandate and regulate for-profits. For example, non-payers have access to emergency phone services.

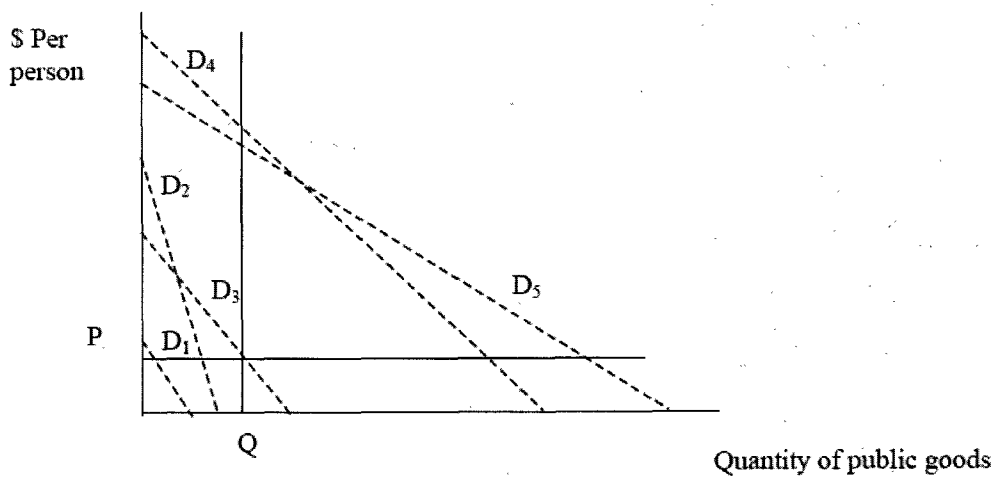
Government decisions on how much and what types of services to provide directly or mandate for-profits to give access to non-payers depend upon how much the

median voter's demand. Also, governments cannot regulate abuses they cannot detect or evaluate. For example, in the health industry, nursing homes services are difficult to evaluate. Payers and the recipients of nursing homes services are two different sets of consumers. It is difficult for the government to regulate or standardize services that consist not of goods but of human involvement. Because of this, the government is impotent precisely when contract failure at its worst (Steinberg, 2006).

Weisbrod (1977) claims that a political voting process determines the output level of public goods or services by the government sector. Depending upon the characteristics of the population, a majority rule voting process can create government failure to meet the demands of collective goods. In the majority rule method, demands of a median voter would determine the output.[4] In this model, the mean will determine the levels of government provision. If the population is heterogeneous, meaning the demand for certain goods varies among the different groups, then there will be a large number of voters dissatisfied with government output.

[4] An alternative method is a *weighted*-majority decision rule, in which the weight attached to each person's vote is some function of the loudness of his 'squawk' (intensity of dissatisfaction with a given tax or allocative decision) (Weisbrod, 1977).

Figure A: Demand Heterogeneity



Source: Weisbrod (1977)

Figure A illustrates a situation where there are five different groups, each having a different demand curve (D1 to D5) for public goods. Assuming that each group is equally taxed then the majority rule process fulfills only the demand of the 'median' group "D3". For D1 and D2, they are paying too much tax and the quantity produced is more than they desire, whereas for D4 and D5 there is not enough output. Even if the weighted-rule method determines the output, the society is still faced with dissatisfied voters.

Weisbrod (1977) claims that the under-satisfied consumers give rise to the nonprofit sector. It follows that the relative size of the nonprofit sector providing a particular public good or service can be expected to be a function of the heterogeneity of population demands.

Government expenditure can have two opposite effects on the size of the nonprofit sector: if government expenditure on a good is sufficient, there is no demand for nonprofits. This implies that nonprofits act as substitutes for government provision of public goods. Government has the power to crowd out nonprofit provision of public

goods by satisfying the unmet demand. We would expect, then, that the size of the nonprofit sector is smaller where the government can spend a significant amount of tax money to supply the collective goods (Matsunaga et al., 2002). Government expenditure can also be complementary to the size of the nonprofit sector, in which case, government expenditure does crowd in the nonprofit sector.

b. Supply theory

The demand-side alone cannot explain the growth of nonprofit organizations because it cannot explain when and how nonprofits will be formed. Researchers (Steinberg, 2006) have emphasized the need to complement demand-side theories with supply-side factors influencing the formation and operation of nonprofits. It is important to carry out demand and supply theories simultaneously because the distinctions between demand and supply side factors are not clear-cut. Some demand-side variables interact with supply-side variables and some factors act from both sides.

i. Government Policies

Government policies can affect the supply of nonprofits. Three types of government policies are important for nonprofits formation and operation. First, government support in terms of grants, contracts and reimbursement payments can directly affect the size of the nonprofit sector. Secondly, laws on tax deductions can

influence nonprofits' operation costs. Finally, tax law on donations can alter the amount of donations nonprofits receive.

Government support can have a significant effect in enhancing the nonprofit sector development especially in activities, which nonprofits have not developed, and in industries where nonprofits compete with for-profit firms (Hansmann, 1987). Likewise, nonprofits may not have to pay certain tax liabilities that apply to for-profits. Government grants can reduce nonprofits' initial fixed costs and tax policies can keep their operational costs low, thus helping the nonprofits to operate in a market dominated by for-profits. Finally, tax deductions to private individuals act as one of the incentives to donate to nonprofits. All three policies enhance nonprofits' revenues.

ii. Legal Institutions

The legal framework of a country can be 'favorable' or 'unfavorable' towards the formation and operation of nonprofit organizations (Salamon and Toepler, 1999). Nonprofit organizations interact with the legal framework in a variety of ways: from the establishment of legal personality and protection of members and officers from personal liability of the organization's actions, to provisions in the tax law, which encourage or discourage philanthropic contributions to such organizations (Salamon and Toepler, 1999). The establishment of nonprofit organizations can be made difficult if the legal processing time to attain legal status is very long and tedious.

The links between the legal environment for nonprofit action and the development of a viable nonprofit sector may not be as clear cut, as this suggests because it is difficult

to gauge what a 'favorable' legal regime for nonprofit action really is (Salamon and Toepler, 1999). Nevertheless, the legal framework of the country has considerable influence on the supply of nonprofit organizations. If the legal framework does not provide any form of security to the nonprofits financially and does not support nonprofits as potential suppliers of public goods, people are less inclined to form such organizations.

V. Theoretical Model

All the theoretical background indicates the need to include both demand and supply factors in explaining the size of the nonprofit sector. The demand function and supply function are given by:

Demand: $P^d = \alpha_0 + \alpha_1 x_1 + \alpha_2 x_2 + \alpha_3 x_3 + \alpha_4 x_4 + \alpha_5 Q^d + \varepsilon_i$ (1)

where, x_1 = POPHET, x_2 = GOVEXP, x_3= GINI, x_4 = GDP

Supply: $P^s = \beta_0 + \beta_1 z_1 + \beta_2 z_2 + \beta_3 Q^s + \varphi_i$ (2)

where, z_1 = LEGAL, z_2 = GINI

Then in equilibrium $P^d = P^s$ such that,

$$\alpha_0 + \alpha_1 x_1 + \alpha_2 x_2 + \alpha_3 x_3 + \alpha_4 x_4 + \alpha_5 Q^d + \varepsilon_i = \beta_0 + \beta_1 z_1 + \beta_2 z_2 + \beta_3 Q^s + \varphi_i$$

To analyze the demand and supply side theory simultaneously, solve for $Q^d = Q^s$,

$$Q(\alpha_4 - \beta_3) = \beta_0 - \alpha_0 + \beta_1 z_1 - \alpha_1 x_1 + \beta_2 z_2 - \alpha_2 x_2 - \alpha_3 x_3 - \alpha_4 x_4 + \varphi_i - \varepsilon_i$$

$$Q = [1/(\alpha_4 - \beta_4)]\,[\beta_0 + \alpha_0 + \alpha_1 x_1 + \alpha_2 x_2 + \alpha_3 x_3 + \beta_2 z_2 + \alpha_4 x_4 + \beta_1 z_1 + \varphi_i + \varepsilon_i]$$

$$Q = \gamma_0 + \gamma_1 x_1 + \gamma_2 x_2 + \gamma_3 x_3 + \gamma_4 x_4 + \gamma_5 z_1 + \varepsilon_i \quad (3)$$

VI. Empirical Model and Data

The empirical model of the nonprofit sector, is given by equation 3,

$$\text{Size of the Nonprofit Sector}_i = \gamma_0 + \gamma_1 \underset{(+)}{\text{POPHET}} + \gamma_2 \underset{(+/-)}{\text{GOVEXP}_i} + \gamma_3 \underset{(+)}{\text{GINI}} + \gamma_4 \underset{(+)}{\text{GDP}} + \gamma_5 \underset{(+)}{\text{LEGAL}} + \varepsilon_i$$

Ideally, my question requires time-series data on the size of the nonprofit sector, government expenditures and religious fractionalization. All the variables should be disaggregated by sector, which would enable us to see if the relationship between the government and the nonprofit sector is consistent over all the different sectors. Also, the data set should include observations from all countries to avoid sample bias. Unfortunately, the data available does not fulfill these ideal conditions.

Actual data

For the study, the dependent variable is the relative size of the nonprofit sector in country *i*:

$$\text{Nonprofit}_i = \frac{\text{Paid Full-time Equivalent Nonprofit Employment}_i}{\text{Total Population}_i}$$

Where, the relative size of the nonprofit sector is measured in terms of paid full-time equivalent (FTE)[5] employment in the nonprofit sector as a share of total population. This proxy measures the size of the nonprofit labor market rather than the number of nonprofit

[5] To compute the number of full-time equivalent workers, the number of part-time workers was multiplied by the average hours such workers devote to work each year divided by the number of hours in an average full-time job over the course of a year. This quotient was then added to the number of full-time workers yield the total full-time equivalent workforce.

organizations.[6] By dividing the FTE employment by total population the scale effect of different countries is eliminated making it more comparable. The data on this variable are not in time-series. The data on size of the nonprofit sector were retrieved from the John Hopkins Comparative Non-Profit Research Project.[7] In total I have 31 country observations, 16 of which are developing countries. Data for 21 of the countries was measures in 1995, while the data form the other 10 was measured between 1997 and 2000. Figures 1 (a) and (b) present the size of the nonprofits in education and health sector, in respect to other sectors the nonprofits operate. Table A shows the sizes of different nonprofit sectors within each country of the sample.

[6] Using the employment level rather than number of NGOs provides a better measurement of the nonprofit sector because it avoids the problem of different sizes of non-profit. If we measured the nonprofit sector in terms of absolute number, there would some non-profits with less than 10 employees and others more than a 1000.

[7] "The Johns Hopkins Comparative Nonprofit Sector Project is a systematic effort to analyze the scope, structure, financing, and role of the private nonprofit sector in a cross-section of countries around the world in order to improve our knowledge and enrich our theoretical understanding of this sector, and to provide a sounder basis for both public and private action towards it" (www.jhu.edu/cnp). The data collection strategy included a careful survey of national statistics and identifying relevant data; as the national statistics data on civil society are aggregated together with other types of economic activities. The national statistics of developing countries encountered more serious obstacles. The main reason was the scarcity of any kind of statistical information in these countries. Data collected strategy for developing countries relied upon expressly designed and implemented organizational surveys (Salamon et al, 2004).

Figure 1(a)

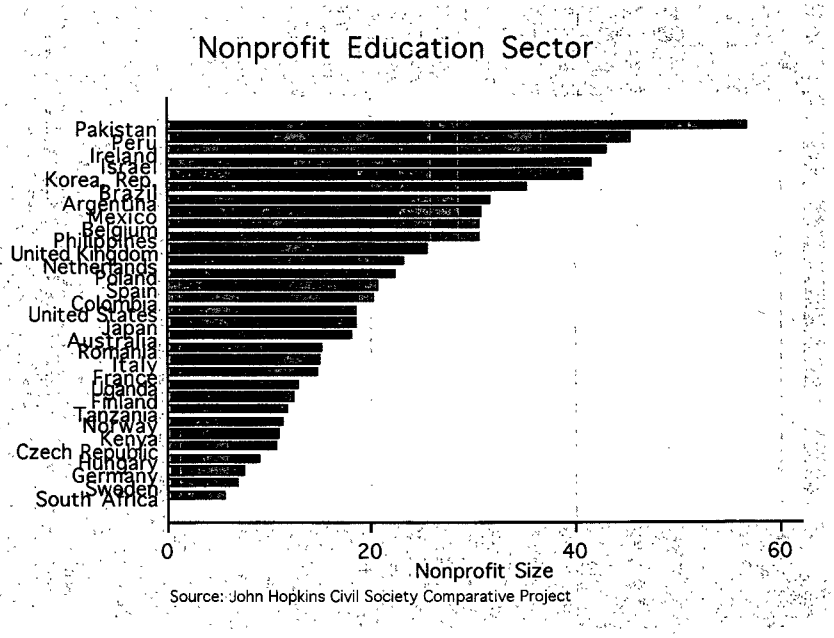


Figure 1(b)

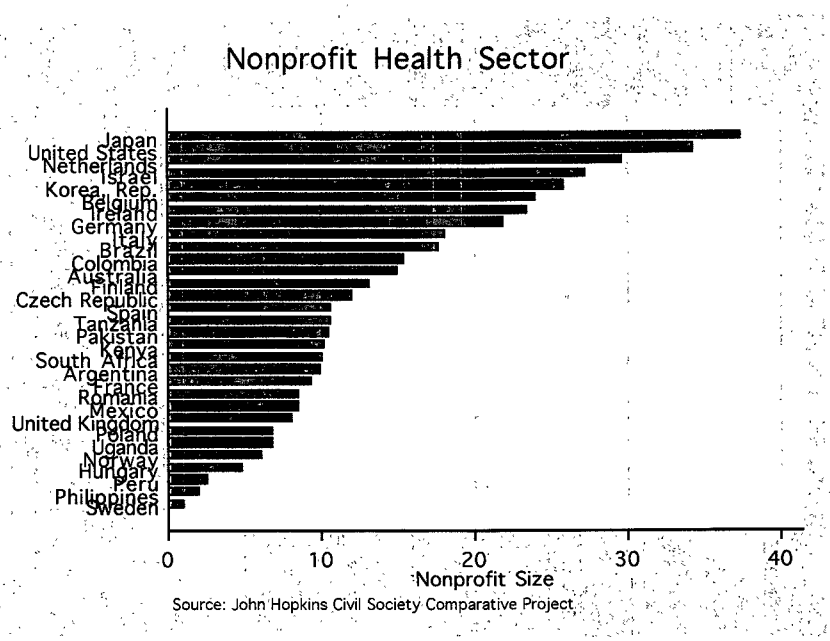


Table A. The nonprofit sector FTE workforce, by field, 31 countries

Country	Culture	Education	Health	Social Svcs	Environment	Development	Civic / Adv.	Foundations	International	Professional	n.e.c.	Total (thousands)
	Percent of total civil society workforce*											
Argentina	13.8	31.5	9.8	13.5	1.6	15.7	1.8	0.1	0.8	8.2	3.2	659.4
Australia	22.7	17.9	14.9	23.6	1.4	10.4	2.9	0.2	0.4	3.3	2.4	579.7
Belgium	11.1	30.5	23.9	22.9	0.5	8.3	0.5	0.3	0.4	1.5	0.0	456.9
Brazil	15.1	35.1	17.5	19.2	0.2	3.0	0.7	0.0	0.4	8.6	0.3	1173.8
Colombia	7.5	20.2	15.3	18.7	0.8	18.5	1.6	1.5	0.1	14.9	0.9	377.6
Czech Rep.	35.8	10.6	11.9	13.1	6.1	6.7	3.5	2.2	1.4	8.6	0.0	115.1
Finland	32.6	12.4	13.1	15.5	0.7	1.6	16.8	0.2	0.4	6.2	0.4	137.6
France	30.0	14.6	9.2	27.4	5.0	4.7	1.9	0.6	2.4	4.3	0.0	1981.5
Germany	19.7	7.6	21.8	27.2	2.8	4.4	3.3	1.0	1.6	4.2	6.4	2418.9
Hungary	36.8	8.9	4.7	15.1	2.2	11.3	2.3	3.7	1.0	14.0	0.0	54.8
Ireland	10.5	43.0	23.3	13.0	0.9	5.7	0.5	0.7	0.4	1.7	0.3	150.3
Israel	8.6	41.4	27.2	16.0	0.6	0.8	2.0	1.6	0.1	1.6	0.0	176.7
Italy	23.9	14.8	18.0	26.1	1.2	3.6	3.0	0.8	0.6	6.7	1.2	950.1
Japan	5.5	18.5	37.3	17.3	0.7	1.9	0.5	1.1	1.6	5.0	10.7	2835.2
Kenya	4.7	10.8	10.1	18.6	4.0	20.2	5.3	0.3	0.0	1.5	24.5	287.3
Mexico	6.4	30.7	8.4	16.3	1.8	1.2	0.8	0.8	0.0	33.6	0.0	141.0
Netherlands	17.2	23.1	29.5	20.3	2.0	1.7	2.9	0.2	1.2	1.8	0.0	1051.8
Norway	41.2	11.2	6.0	14.0	0.6	4.3	6.3	0.2	2.9	13.1	0.3	163.0
Pakistan	5.2	56.6	10.4	8.0	0.3	7.8	10.0	0.0	0.0	1.7	0.0	442.7
Peru	2.5	45.2	2.6	38.3	0.4	8.8	0.5	0.9	0.0	0.9	0.0	210.0
Philippines	5.6	30.5	2.0	6.2	2.1	21.3	1.7	1.0	0.4	29.3	0.0	517.6
Poland	32.7	22.2	6.7	19.5	1.7	1.0	1.0	0.4	1.0	10.8	3.0	154.6
Romania	28.6	15.1	8.5	32.2	2.2	2.4	3.8	1.0	4.0	2.4	0.0	83.9
South Africa	17.6	5.5	10.0	25.6	5.9	17.9	15.9	0.4	0.0	1.1	0.0	562.4
South Korea	4.9	40.5	25.8	15.5	0.0	0.0	9.9	0.0	0.0	3.4	0.0	535.4
Spain	15.2	20.6	10.5	30.8	3.0	9.2	5.9	0.1	2.6	1.8	0.2	728.8
Sweden	45.5	6.8	0.9	10.5	2.1	4.4	10.2	0.2	2.3	15.4	1.7	342.9
Tanzania	10.3	11.7	10.5	16.4	10.6	12.8	7.1	7.8	3.9	3.2	5.8	330.9
Uganda	22.7	12.8	6.7	28.8	1.0	20.2	0.5	1.0	0.2	3.3	2.6	228.6
United Kingdom	27.5	25.4	8.0	16.0	2.4	12.5	1.8	1.3	2.4	1.5	1.2	2536.0
United States	9.0	18.5	34.2	22.1	1.0	4.0	4.9	1.0	0.3	3.9	1.1	13549.1

* Percentages add to 100% across fields.
SOURCE: Johns Hopkins Comparative Nonprofit Sector Project

The demand-side explanatory variables are population heterogeneity (POPHET) and Government expenditure (GOVEXP). The supply-side explanatory variable is the Legal Environment Scale (LEGAL). The Gini Index (GINI) measures the inequality of income in a country, which could affect size of the nonprofit from both the demand-side and supply-side. The proxy for population heterogeneity is measured using religious

fractionalization data obtained from Anthony Annett.[8] Government failure theory claims that a heterogeneous population creates diverse demands. As discussed above, if the government fails to meet all the different demands, nonprofits fill in this unmet demand. This theory predicts that population heterogeneity is positively related to the size of the nonprofit sector.

Government expenditure is the total public spending in the sectors in which nonprofits are operating (GOVEXP). The theory indicates that a lack of government expenditure creates excess demand. If this is so, then we expect government expenditure to be negatively related to the size of the nonprofit sector. Under this proposition, we are also assuming that services provided by government and nonprofits have some substitubility. The data for GOVEXP on education and health is in terms of 'Public Spending on Education, Total (% of GDP)' and 'Health Expenditure, Public (% of GDP), both obtained from World Development indicators.

The legal environment index (LEGAL) consists of fourteen legal provisions thought to affect the ease with which nonprofits can form and operate and this is a supply-side factor.[9] Institutions of any type (for-profits and non-profits) form and exist

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[8] The index of religious fractionalization is from Anthony Annett, "Social Fractionalization, Political Instability and the Size of the Government". It simply measures the probability that two randomly drawn people in a specific country will not belong to the same religious group. The data used in compiling this index comes from the World Christian Encyclopedia (Barnett, 1982) and all information retains to the early 1980s. Any religion listed by the Barnett (1982) as a distinct religion in a given country is included in the index.

[9] The Legal Environment Index is obtained from the John Hopkins Centre of Civil Society Studies. The index is made up of three sets of legal provisions that have important affects on the supply of nonprofit organizations. (1) General Legal Posture; Right to associate, Allowable general purposes, and Allowable political activities; (2) Establishment: Unincorporated organizations permissible, Membership requirements, Capital requirements, Government involvement on boards, and Government discretion in granting legal status, Appeal procedures; and (3) Financing: Broadness of organizational tax exemption, Income tax exemption, Real state/property tax exemption, Stand and other duties exemption, Indirect tax exemptions, Permissibility and tax treatment of unrelated business activities, Taxation of "unrelated"

only when they confer benefits greater than the transaction costs of creating and operating them (Salamon and Toepler, 2000). The transaction costs consist of negotiation, execution and enforcement. The more difficult the requirement to create and operate such organizations, the less likely it is for entrepreneurs to form them (Ben-Ner and Hoomissen, 1992). The laws regarding formation and operation of nonprofits are one of the potential barriers. The legal environment variable is predicted to be positively related to the relative size of the nonprofit sector.

The Gini index is both a supply-side and demand-side variable. This index measures the degree of inequality in income and consumption. A country with high inequality has a large population at one end of the spectrum where their relative income and consumption is low. On one hand, the poorer population creates a demand for nonprofits to supply goods and services at low prices or free. It is a proxy for the level of demand of the poor or those who are unable to pay for the same service provided by for-profit firms or even the government. On the other hand, to form and operate nonprofits there needs to be supply of human and financial capital. A country with higher income inequality also has of populations whose income and consumption is relatively much higher than others. This population has the ability to financially support and supply human capital to form and operate nonprofits. From both demand and supply aspects a high Gini index is expected to positively correlate with the size of the nonprofit sector.

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business income, Organizational tax benefits for contributions, Tax benefits for individuals donors and Tax benefits for corporations donors. The coding system was devised to rate the provisions of the legal codes of various countries in terms of supply. Drawing of the detailed memoranda produced by legal experts in the countries covered by the John Hopkins Centre of Civil Society Studies, this coding system was applied to the legal codes of the project countries. The resulting scores were then verified with the local legal experts and summed to form a legal environment supply score for each country.

Finally, GDP per capita is placed as a control for economic development. It is expected to positively correlate with the size of the nonprofit sector, under the assumption that economic development/growth will positively effect all three sectors of the economy (for-profits, nonprofits and government).

Summary Statistics

Table 2 Description Statistics of Nonprofit Educational and Health Sector

Variable	mean	Std. Dev	max	min
Nonprofit size (EDU)	0.4506	0.457	1.69	0.044
Nonprofit size (HEALTH)	0.368	0.479	1.95	0.012
GOVEXP (EDU)	4.53	1.27	7.39	1.837
GOVEXP (HEALTH)	4.59	1.985	8.2	0.537
POPHET	0.398	0.26069	0.834	0.041
GINI	36.88	10.04	58.62	24.85
LEGAL	19.29	4.01	26	5
GDP	12745.72	11375.15	37164.6	244

Table 2 provides the summary statistics of the data. As the table shows there are huge discrepancies between the different observations. First, the mean of nonprofit sector in education is larger than that of health. The mean size of the nonprofit sector for both health and education are very small. The maximum being only 1.69 for education and 1.95 for health. Also, in both the sectors there is huge discrepancy in the largest and smallest nonprofit sector across countries. Government expenditure as a percentage of GDP in both the sectors is similar, with the mean showing education sector to be slightly lower than health. Figures 2(a) and 2(b) show the scatter plots of government expenditure and nonprofit size. Some of the developed countries have high government spending and large nonprofit size. There are countries such as Sweden, that have smaller nonprofit size and large government spending.

Figure 2(a) Government Expenditure and the Nonprofit Education Sector

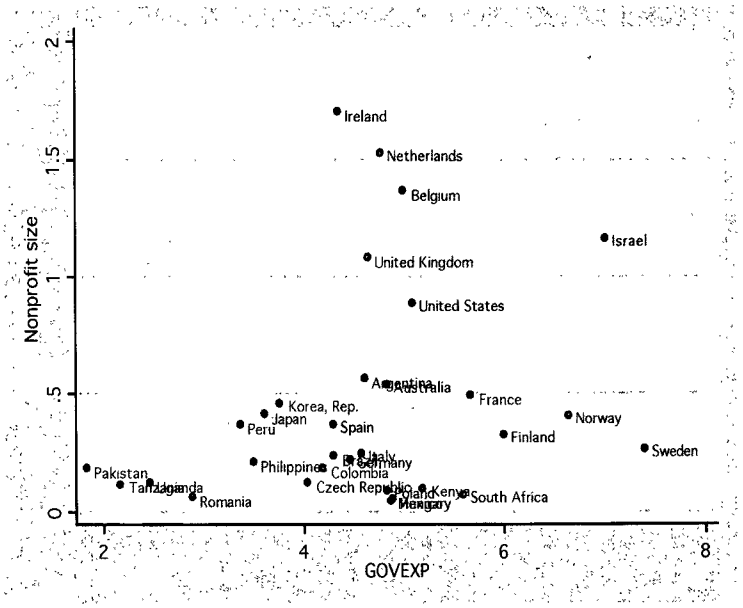
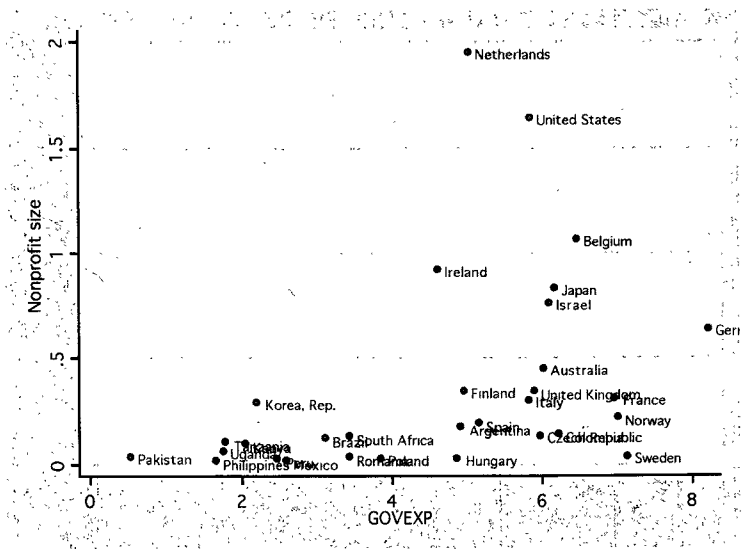


Figure 2(b) Government Expenditure and the Nonprofit Health Sector



Religious fractionalization data show countries with very heterogeneous populations and others with relatively homogenous populations. Figures 3(a) and 3(b) show that for example, African countries (Kenya, Tanzania, Uganda and South Africa)

are more religiously heterogeneous than South American countries (Argentina, Brazil, Colombia, Mexico and Peru) and Pakistan.

Figure 3(a) Population Heterogeneity and the Nonprofit Education Sector

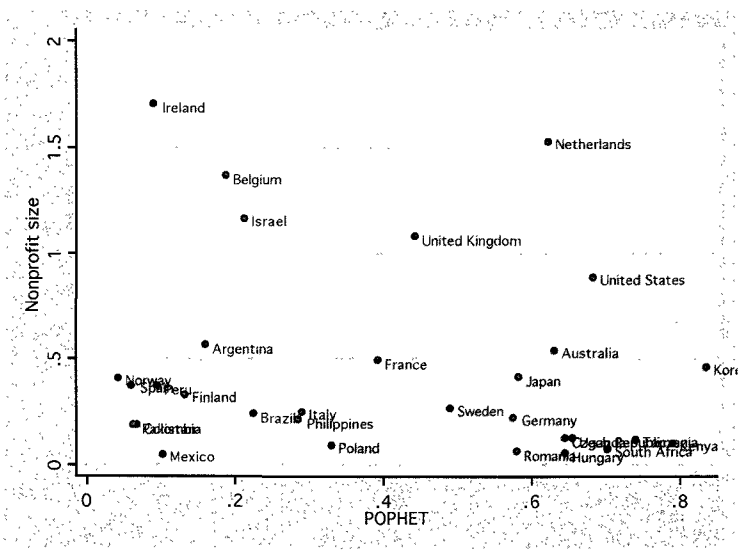
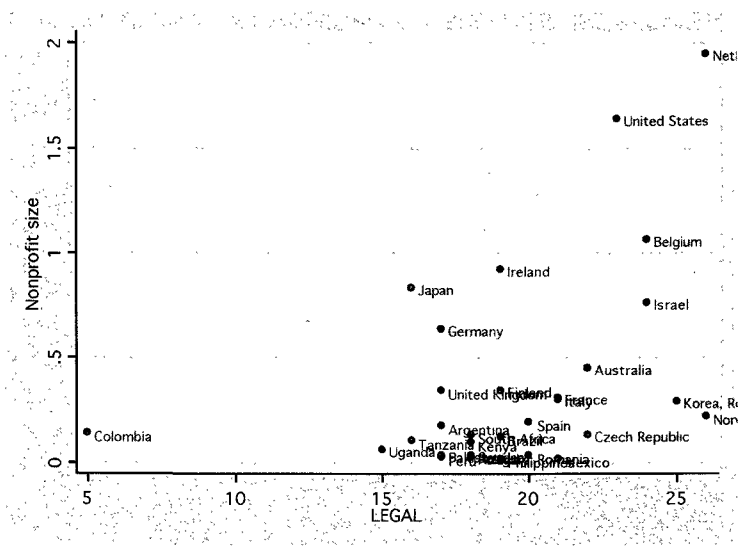


Figure 3(b) Legal Environment Index and the Nonprofit Health Sector



Figures 5(a) and 5(b) show the scatter plots for Gini index and the nonprofit sector. Most notably, developing countries have much larger mean Gini index than the

developed countries. The developing countries have higher values of Gini Index and smaller nonprofit sector size.

Figure 5(a) GINI Index and the Nonprofit Education Sector

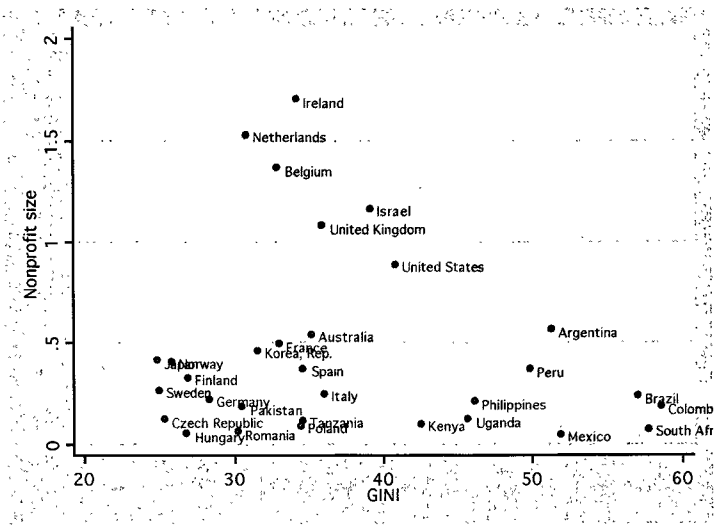
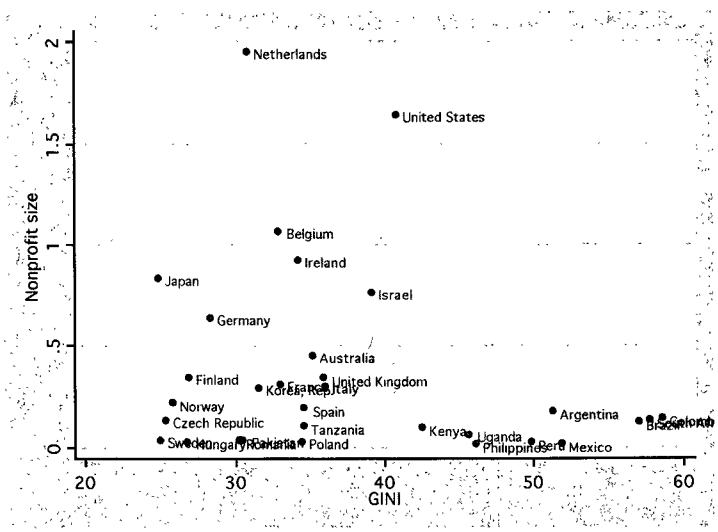


Figure 5(b) GINI Index and the Nonprofit Health Sector



Finally, figures 6(a) and 6(b) show the relationship between the GDP per capita and the nonprofit sector. The developing countries are all clustered towards the left

corner in the scatter plots. The developed countries have more variance in the relationship between GDP per capita and the nonprofit size.

Figure 6(a) GDP Per Capita and the Nonprofit Education Sector

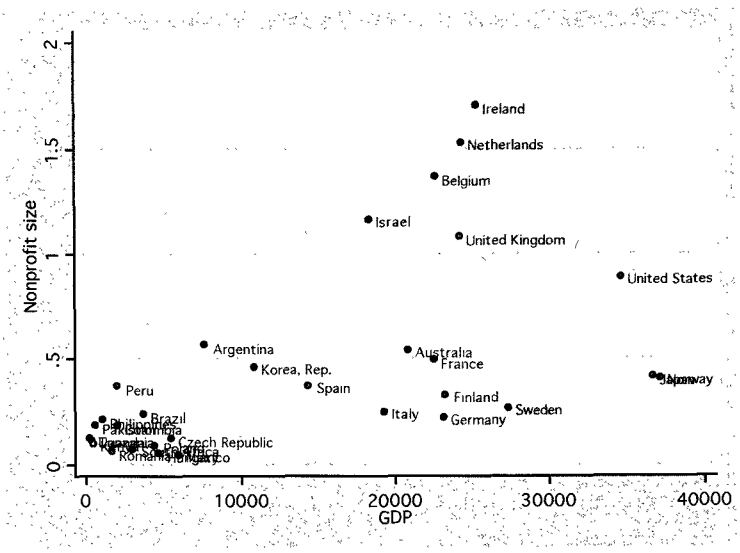
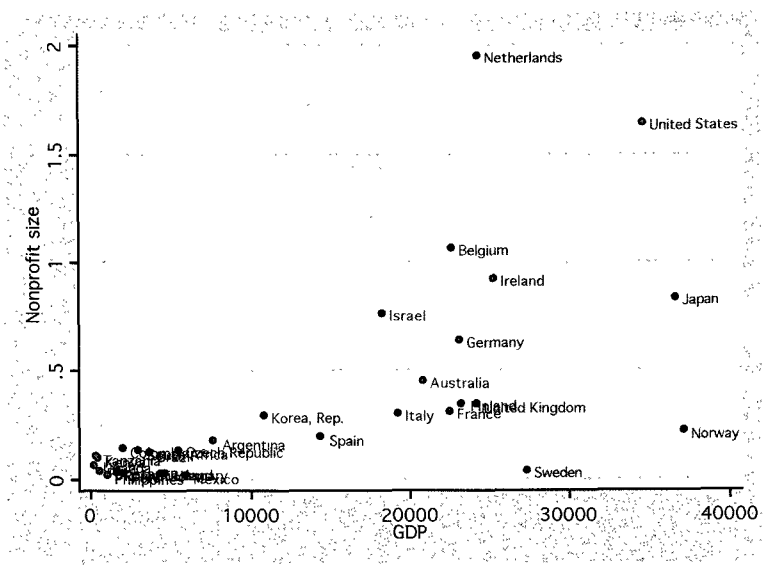


Figure 6(b) Government Expenditure and the Nonprofit Education Sector



VII. Empirical Analysis and Results

a. Education

Table 3 (a) Initial Results for the Nonprofit Education Sector

Variables	Nonprofit size
POPHET	-0.227
	(-0.82)
GOVEXP	-0.075
	(-1.11)
GINI	0.012
	(-1.42)
LEGAL	0.037
	(-1.83)
GDP	-0.0000255
	(3.11)**
Constant	-0.641
	-1.1
Observations	31
R-squared	0.43

Absolute value of t statistics in parenth
* significant at 5%; ** significant at 1%

I ran OLS regressions for education and health sectors. Table 3(a) presents the results for education. GDP per capita is the only statistically significant independent variable. Contrary to previous studies and the conceptual model, POPHET is negatively correlated to the size of the nonprofit sector. According to the result .1 units increase in religious heterogeneity decreases the nonprofit size by .02%. This number itself is very small, however, the mean of the total nonprofit education sector is only .45. This means the magnitude of the coefficient is large enough for me to interpret the sign.

This negative correlation calls into question the effect of religious heterogeneity on a society. Previous empirical results on the relation between religious fractionalization and the nonprofit have been inconclusive. But, there has not been any explanation on how religious fractionalization could in contrary to the theoretical prediction, have a negative effect on the nonprofit sector. One way to explain this negative correlation is the presence

of internal homogenous groups in a heterogeneous society. In societies where there are several different but internally-homogenous associations, trust and cooperative norms within an ethnic/religious group might be strong, but this will weaken trust and cooperation between groups (Knack and Keefer, 1997). Religious fractionalization might be a double-edged sword. If there is polarization between the different factions, there will be greater distances between preferences of individuals or groups in a society (Knack and Kneefer, 1997), thus creating diverse demands.

Lack of interaction and trust between different groups might have a negative effect on forming and operating nonprofits in various ways. As discussed earlier, nonprofits engage in cross-subsidization to be able to serve those who cannot pay. To cross-subsidize their services, nonprofits need constituents (consumers) consisting of both the wealthy and the poor. From the wealthier consumers, they make the profit (through donations or higher fees) needed to subsidize (through lower prices) the poor. If the population is made up of small groups with relatively equal intra-group income distribution who do not interact well with one another, their sources of donations and the number of consumers to whom they can charge high prices is reduced. Volunteering is an important way for nonprofits to keep their operation cost low. If the nonprofit firms are set out to serve the demand of only a small population from that population there will be fewer volunteers to supply goods/services. This makes it more costly for nonprofits to operate, making supply difficult in the face of demand.

The ratio of rich to poor in the population is important to the functioning of nonprofits. If the nonprofit needs to serve only a small population, then they will need fewer resources. Still the size and characteristics of the population are important because

if the size of the marginalized population is big then the nonprofits require more financial and human resources. Even if we assume that there is homogeneity in terms of percentage of rich to poor within each religious group in a heterogeneous society, with smaller amount of resources, the nonprofits are restricted in terms of the variety and quality of their services, making their sustainability difficult. Also, in terms of legislation regarding nonprofits, lobbying for laws and regulations to the government is difficult in socially polarized societies.

The government expenditure on education is negatively correlated with the size of the nonprofit sector and is statistically insignificant. The sign of the coefficient indicates that lack of public spending on education creates an excess demand. Finally, the Legal Environment Index is statistically insignificant and positively correlated with the size of the nonprofit education sector.

The Gini Index is positively correlated with the size of the educational nonprofit sector, which is as predicted. However, the lack of statistical significance makes it difficult to infer any conclusions from the magnitude of the coefficient. Finally, GDP per capita is positively correlated with the size of the nonprofit educational sector and statistically significant. This shows that the income level affect the size of the nonprofit. The fit of the model given by the R^2 is 0.43, which indicates that the model explains about little less than half of the variations.

b. Health

Table 3(b) Results for Nonprofit Health Sector

Variables	Nonprofit size
POPHET	0.394
	(-1.47)
GOVEXP	-0.022
	(-0.42)
GINI	0.013
	(-1.58)
LEGAL	0.024
	(-1.22)
GDP	0.00003
	(2.74)*
Constant	-1.058
	-1.7
Observations	31
R-squared	0.52

Absolute value of t statistics in parenth
* significant at 5%; ** significant at 1%

Similar to the results for the nonprofit education sector, GDP per capita is the only independent variable that is statistically significant. According to the results shown in table 3(b), a 1% increase in GDP per capita leads to a .000003% increase in the nonprofit health sector. Opposite to the education sector, religious fractionalization is positively correlated with the size of the nonprofit. This result indicates that in the health sector, religiously diverse population has positive effect on the size of the nonprofit health sector. The government expenditure is negatively correlated, indicating that the nonprofits and the government have some level of substitubility. Finally, both the Gini and Legal Environment Index are positively correlated with the nonprofit health sector.

From the different results in terms of the coefficients' sign in the health sector, we can argue that the determinants of the size of the nonprofit sector operating in the health are different from the education sector. Health is fundamentally different than education in terms of demand differentiation. The demand for health services is less individualized

than other services. For example, different religions in a country might have different educational preferences.

Some may want to send their children to schools that have classes teaching their religions or want their children to be around other children from the same religion. Whereas, regarding health, people may have different demands for the quality of the services but there is not much differentiation when it comes to types of health services.[10] The hospital that conducts appendicitis surgery may differ in terms of the hospital facilities but not in terms of how and who does the surgery. These results indicate that, contrary to what has been shown in the literature so far, the explanatory variables determining the size of the nonprofit sector in health might be very different from other sectors in which nonprofits operate.

Testing for Data Problems

First of all, I tested for mullticollinearity in the data. I expect some degree of mullticollinearity as two of my variables- government expenditure in health and education and GDP per capita- is all in terms of GDP. I test for mullticollinearity using the Variance Inflation Factor (VIF). The results are presented in tables 4(a) and 4(b).

[10] The literature on the relationship between health and religion assert that mental and physical health has been shown to be related to different religious affiliation. Some religious practices have a positive effect on health. A survey conducted by the Religion and Spirituality in the Medical Encounter Study (RESPECT) found that although patients expressed general interest in the spiritual dialogue with their physicians, only 10% would forgo time spent discussing medical issue for a discussion of spirituality (Mclean et al., 2001). This survey was conducted in at 6 academic medical centers in 3 states (NC, Fla, Vt). On the other hand, medical anthropologists have pointed out that religion does influence the demand for the type of medical services. The literatures on faith healers argue that people might opt for traditional medical services. In my data set, the majority of the nonprofits health services are in forms of hospitals and clinics.

Following the common rule of thumb, as none of my independent variable has a VIF value greater than 5, I conclude that there is no severe mullticollinearity.

Table 4(a) The Nonprofit Educational Sector

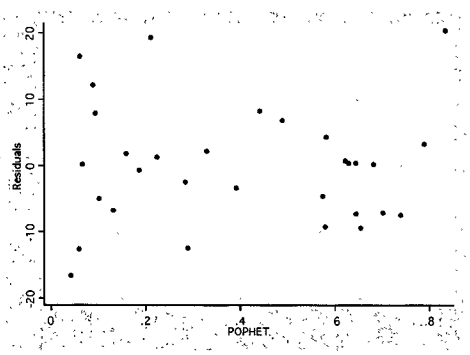
Variable	VIF	1/VIF
gdp	2.05	0.488095
gini	1.65	0.607313
govexp	1.57	0.636903
legal	1.38	0.723863
pophet	1.10	0.905120
Mean VIF	1.55	

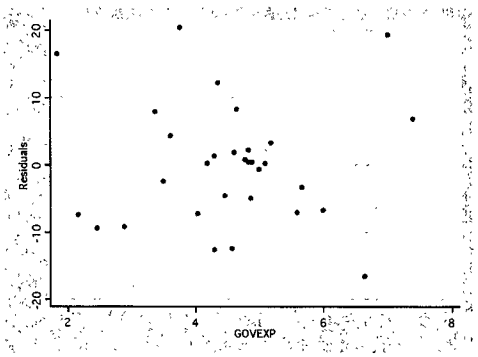
Table 4(b) The Nonprofit Health Sector

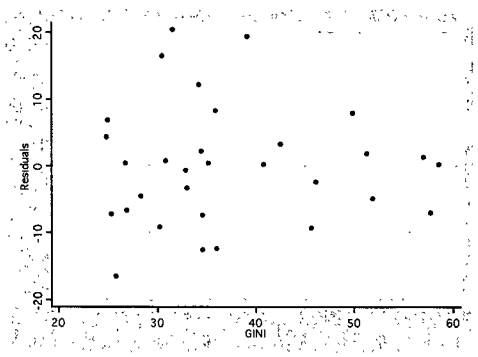
Variable	VIF	1/VIF
gdp	3.12	0.320924
govexp	2.43	0.411956
gini	1.55	0.645541
legal	1.41	0.707782
pophet	1.10	0.909725
Mean VIF	1.92	

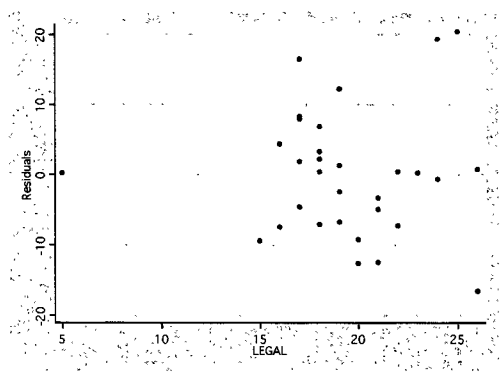
Cross-sectional data are not only the most likely source of heteroskedasticity but, with large variations in the size of dependent variable, data are very susceptible to heteroskedasticity (Studenmund, 2006). To test for heteroskedasticity, I graphed the residuals against each of my independent variable. Figures 7a and 7b show the scatter plots of the result. From the scatter plots none of my variables is highly heteroskedastik.

Figure 7(a) Residuals- The Nonprofit Educational Sector




Residuals
20
10
0
-10
-20
2
4
6
8
GOVEXP


Residuals
20
10
0
-10
-20
20
30
40
50
60
GINI


Residuals
20
10
0
-10
-20
5
10
15
20
25
LEGAL

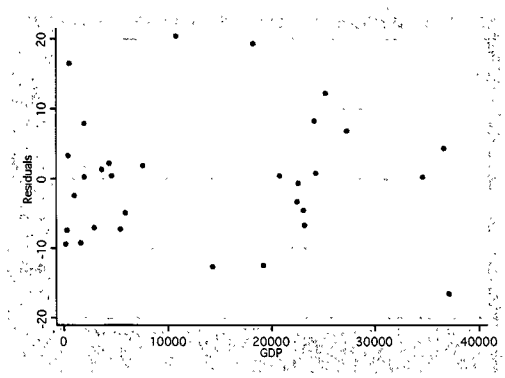
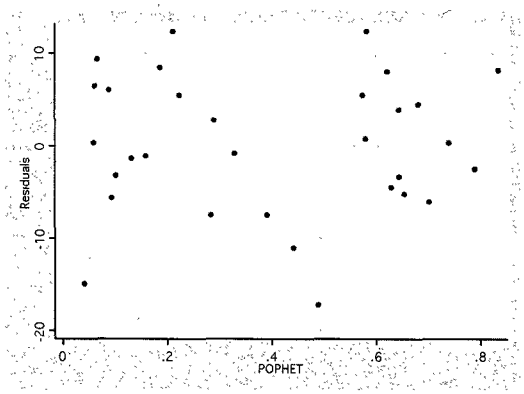
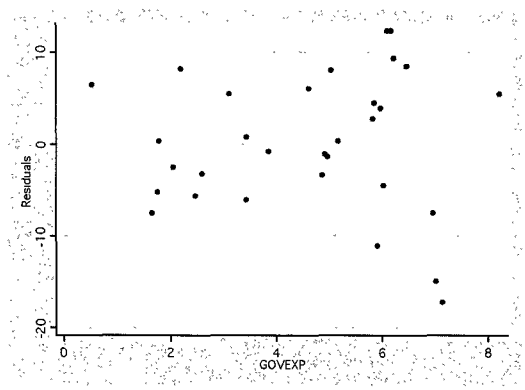
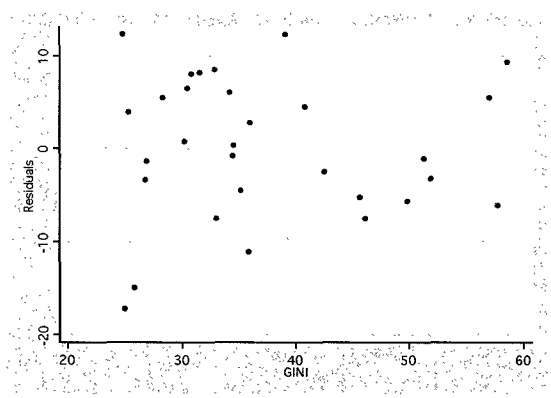
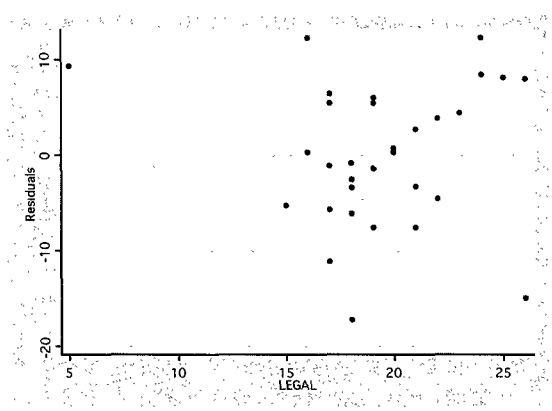

Residuals
20
10
0
-10
-20
0
10000
20000
30000
40000
GDP

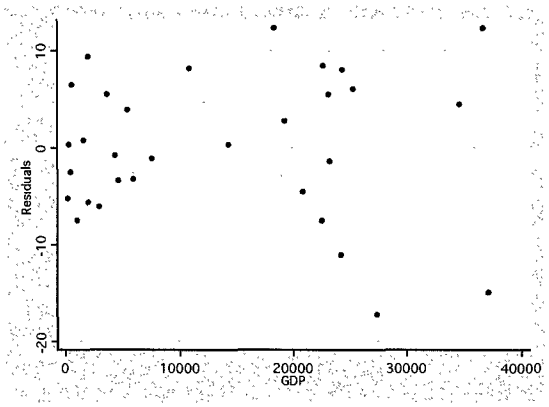
Figure 7(b) Residuals - The Nonprofit Health Sector











Robustness

For the first robustness check, I drop South Korea, which the scatter plots show to be the most influential individual case. Table 5(a) presents the results for the education sector. The signs of the all the variables remain the same as my initial results. All the variables except GDP per capita are statistically insignificant. Moreover, the magnitude of government expenditure, gini index and GDP per capita are unchanged. Only the population heterogeneity decreases from -0.227 to -0.224.

Table 5(a): Dropping South Korea – Result for nonprofit education sector

Variables	Nonprofit size
POPHET	-0.224
	(-0.77)
GOVEXP	-0.075
	(-1.08)
GINI	0.012
	(-1.39)
LEGAL	0.037
	(-1.72)
GDP	0.000025
	(3.04)**
Constant	-0.645
	(-1.07)
Observations	30
R-squared	0.43

Absolute value of t statistics in parentheses
* significant at 5%; ** significant at 1%

For the health sector, the OLS regression result in table 5(b) is similar to the initial result. The only variable statistically significant is the GDP per capita at 5% level

and remains positively correlated. All other variables have the same sign as the previous result without statistical significance.

Table 5(b) Dropping South Korea – Results for nonprofit health sector

Variables	Nonprofit size
POPHET	0.458
	(-1.63)
GOVEXP	-0.032
	(-0.59)
GINI	0.013
	(-1.55)
LEGAL	0.028
	(-1.37)
GDP	0.000031
	(3.18)*
Constant	-1.095
	-1.74
Observations	30
R-squared	0.53

Absolute value of t statistics in parentheses
* significant at 5%; ** significant at 1%

I ran a second robustness check by dropping the Gini index. For the education sector, the result is shown in table 6(a). The results are similar to my initial result, except GDP per capita all variables are statistically insignificant. The magnitudes of the coefficients are similar to the initial results. For health again as shown in table 6(b), GDP per capita remains positively correlated with the size of the nonprofit sector and it is the only statistically significant variable at 5% level. Population heterogeneity and Legal Environment Index remains positively correlated and government expenditure negative. The magnitudes of the variables are very similar to the initial result.

Table 6(a): Dropping Gini: Results for nonprofit education sector

Variables	Nonprofit size
POPHET	-0.316
	(-1.15)
GOVEP	-0.051
	(-0.76)
LEGAL	0.03
	(-1.49)
GDP	0.000019
	(2.72)*
Constant	-0.035
	-0.08
Observations	31
R-squared	0.39

Absolute value of t statistics in parentheses
* significant at 5%; ** significant at 1%

Table 6(b): Dropping Gini - Results for Nonprofit Health Sector

Variables	Nonprofit size
POPHET	0.287
	(-1.08)
GOVEXP	-0.027
	(-0.5)
LEGAL	0.017
	(-0.88)
GDP	0.00002
	(2.75)*
Constant	-0.326
	-0.76
Observations	31
R-squared	0.47

Absolute value of t statistics in parentheses
* significant at 5%; ** significant at 1%

VII. Conclusion

The aim of this paper was to determine how demand and supply factors influence the size of the nonprofit sector. Qualitative research in this study is not new but with the recent growth in this sector, doing more quantitative studies is becoming increasingly possible and necessary. The past empirical studies focused mainly on what creates the demand for nonprofit organizations. The few empirical studies that simultaneously examined both the demand and supply for nonprofits focused on a single country.

The demand-side theory consists of: market failure, asymmetric information and government failure. For-profit firms fail to provide adequate amounts of health and education services, because they do not allow for free-ridership. When services suffer from asymmetric information, favoring the suppliers, consumers opt for nonprofits that are regarded as more trustworthy. The first response to market failure comes from the government that uses taxes to supply for excess demand left by the market. Government output decisions are based upon fulfilling the median voters demand. In a heterogeneous

population, where there are diverse demands, the government does not fulfill the demand of the entire population.

The supply theory consists of factors that influence the formation and operation of nonprofits. Government policies regarding the amount of subsidy directly given to the nonprofit, tax deduction laws and income tax law on donations, all influence the cost of forming and operating nonprofits. Other legal regulations that can make the process of running nonprofits more difficult or easier also influence the size of the nonprofit sector.

The lack of statistical significance makes it difficult to support or dismiss any of the theoretical predictions. The low number of observations could be one of the causes of the statistical insignificance. Another source is the religious fractionalization index; this variable might not be capturing the diverse demands of the population. Any given population may be religiously homogeneous but linguistically and ethnically heterogeneous. For example, the South American countries in this data set have religiously homogenous population. However, there is diversity in these countries in terms of ethnicity. Using religious fractionalization as a proxy for population heterogeneity may not capture the diverse demands of the population, which the theory predicts to positively affect the size of the nonprofit.

Another cause of statistical insignificance is the way I measure the dependent variable. As the FTE nonprofit employment is divided by total population (this eliminate the scale effect different countries), the range of the magnitude of the dependent variable becomes very small. A better measurement of the nonprofit sub-sector would be to replace the denominator with total employment in sector *i*. Expressing the proportion of

nonprofit FTE employment in sector *i* in terms of total employment in the sector *i* will more accurately measure the size of the nonprofit sector.

GDP per capita is the only statistically significant and robust variable for both educational and health sector. For both sectors, it is positively correlated with the size of the nonprofit sector indicating that the higher income level has positive effect to the size of the nonprofit sector. Despite the statistical insignificance, we can interpret the signs of the coefficients. In the education sector, government expenditure is negatively correlated with the size of the nonprofit educational sector, indicating some level of substitutability between the government provision and the nonprofit. The result also indicates that the legal environment has positive influence on nonprofits' formation and operation, inferring public policies are important in the size of the nonprofit sector.

On the basis of the signs of the coefficients alone, this study also brings new debate to the findings of the previous studies' and theoretical predictions. Contrary to the prediction that population heterogeneity, measured by religious fractionalization, increases the demand for nonprofits, the result show that population heterogeneity has a negative effect on the size of the education sector and positive effect on the nonprofit health sector.

Population heterogeneity creates diverse demands that should induce demand for nonprofit but if the different religious groups do not interact well with one another or share capital, then it is harder to form and operate nonprofits. Diversity of demands within each group is necessary for nonprofits to cross-subsidize their services. If there is no diversity in the demands of the wealthy, then it becomes difficult for the nonprofits to collect donations and fees from the wealthy to subsidize services for the poor. For

example, if the wealthy only demand nonprofits to supply certain type of education, schools consisting only wealthy children. Then, it is difficult for the nonprofit to collect revenue to open schools for the poor. In future studies, it would be important to test and support this hypothesis the level of internal social homogeneity should be included as an explanatory variable.

The lack of statistical significance and the different signs in the health sector as compared to the education sector also indicates several hypotheses. First, maybe the factors influencing the health sector are different than the educational sector. One hypothesis why this might be the case is that health is less individualized than education. Preferences over health services may not be influenced substantially by religious affiliation. This indicates that the sector's functioning depends on the industry's characteristics. Contrary to past studies, to study the nonprofit health sector, we need to analyze the health industry and then run the test with variables more important for this sector.

With 31 observations, I am limited in the types of analyses I can conduct. This indicates the need to collect more data. Also, with cross-sectional data, I can only observe the nonprofit sector at a certain time. To evaluate the trend of this sector, I need time-series data. Future research on the growth of the nonprofit sector should conduct separate studies for health and education, as the functioning of one industry might be very different from others. The determinants of the health sector can be different from the education sector.

Studies measuring population heterogeneity using religious heterogeneity differ in the way they calculate this index. This shows the need to standardize the method through

which the religious index is calculated. Moreover, population heterogeneity itself can be measured in various ways. For more robustness checks, I need to test the data with different proxies of population heterogeneity.

Another set of supply-side variables that could be influencing the size of the nonprofit sector is the foreign aid the nonprofit sector might be receiving. Due to the lack of data on this variable, I could not test its effect. The study also cannot explain the statistical insignificance of Gini index, which the theory predicts to be important. Also, the summary statistics show that there are huge discrepancies among the observations. In examining the data, most of the Western European and Nordic countries have much larger (more than 50%) payments from government as the source of nonprofit revenue. Conducting a regional analysis might better illustrate the factors driving their growth. Additionally, the influential cases such as Israel, South Korea and Colombia raise the need to study individual cases in depth.

The importance of studying the nonprofit sector is growing as more financial funds and human capital are being spent in this industry. Also, as this industry provides more of the goods and services that have significant effect on the population, public policies toward this sector are becoming increasingly important. Future studies of the nonprofit sector should concentrate on both demand and supply factors. Efforts have to be concentrated in conducting in depth analysis of the different sectors in which nonprofits operate in and in collecting the necessary data.

References

Abzug, R., and J. K. Turnheim. 1998. Bandwagon or band-aid? A model of nonprofit incorporation by state. *Nonprofit and Voluntary Sector Quarterly* 28, .

Azam, Jean-Paul, and Jean-Jacques Laffont. 2003. Contracting for aid. *Journal of Development Economics* 70, (1) (February 2003): 25-58.

———. 2003. Contracting for aid. *Journal of Development Economics* 70, (1) (February 2003): 25-58.

Bendick, M., Jr. 1977. Education as a three sector economy. In *The voluntary sector: An economic analysis.*, ed. B. A. Weisbrod. second ed. Lexington, Massachusetts, Toronto: Lexington Books.

Ben-Ner, Avner. 1986. Nonprofit organizations: Why do they exist in market economics? In *The economics of nonprofit institutions.*, 94. New York: Oxford University Press.

Ben-Ner, Avner, and Theresa V. Hoomissen. 2004. Nonprofit organization in the mixed economy. *The Economies of Nonprofit Enterprises*: 43.

Ben-Ner, Avner, and Theresa Van Hoomissen. 1991. Nonprofit organizations in the mixed economy. *Annals of Public and Cooperative Economic* 62, (4).

———. 1992. An Empirical analysis of the joint determination of the size of the for-profit, nonprofit and government sectors. *Annals of Public and Cooperative Economic* 63, (3).

Besley, Timothy, and Maitreesh Ghatak. 2004. Public goods and economic development. *Policies for Poverty Alleviation.*

Brown, E., and A. Slivinski. 2006. Nonprofit organizations and the market. In *The nonprofit sector: A research handbook.*, eds. W. W. Powell, R. Steinberg. second ed., 140. New Haven & London: Yale University Press.

Clarke, G. 1998. Non-government organization (NGOs) and politics in the developing world. *Political Studies* 6: 36.

———. 1995. Participation and protest: Non-governmental organizations and Philippines politics. School of Oriental and African Studies, University of London.

Corbin, J. J. 1999. A study of factors influencing the growth of nonprofits in social services. *Nonprofit and Voluntary Sector Quarterly* 28.

Fowler, A. 1991. The role of NGO's in changing state-society relations: Perspectives from eastern and southern Africa. *Development Policy Review* 9, .

James, Estelle. 1993. Why do different countries choose a different public-private mix of educational services? *The Journal of Human Resources* 28, (3): 571-92.

———. 1983. How nonprofits grow: A model. *Journal of Policy Analysis and Management* 2, (3): 350-65.

Kamat, Sangeeta. 2004. The privatization of public interest: Theorizing NGO discourse in a neoliberal era. *Review of International Political Economy* 11, (1) (February 2004): 155-76.

Knack, S., and P. Keefer. 1997. Does social capital have an economic payoff? a cross-country investigation. *The Quarterly Journal of Economics* 112, (4): 1251-88.

Lee, A. J., and B. A. Weisbrod. 1977. Collective goods and the voluntary sector: The case of the hospital industry. In *The voluntary nonprofit sector: An economic analysis.*, ed. B. A. Weisbrod. second ed. Lexington, Massachusetts, Toronto: Lexington Books.

MacLean, C. D. et al. 2003. Patient preference for physician discussion and practice of spirituality. *Journal of General Internal Medicine* 18, : 38.

Marcuello, C. 1998. Determinants of the non-profit sector size: An empirical analysis in Spain. *Annals of Public and Cooperative Economics* 69, (2): 175.

Matsunaga, Y., and N. Yamauchi. 2002. What determines the size of the nonprofit sector? A cross-country analysis of the government failure theory and the interdependence theory. ISTR Conference working paper Cape Town.

———. 2001. Is governmental failure theory still relevant?: A panel analysis using the U.S state level data. Discussion Papers in Economics and Business.

Powell, W. W., and R. Steinberg, eds. 2006. *The non-profit sector: A research handbook.* Second ed. New Haven & London: Yale University Press.

Rose-Ackerman, Susan. 1996. Altruism, nonprofits and economic theory. *Journal of Economic Literature* 34, (2): 701-28.

———. 1986. *The economics of nonprofits institutions*. New York: Oxford University Press.

Salamon, L. M., H. K. Anheier, R. List, S. Toepler, and Sokolowski, S. W. and Associates. 1999. *Global civil society: Dimensions of the nonprofit sector*. Baltimore, MD: The John Hopkins Centre for Civil Society Studies.

Salamon, Lester M., and Helmut K. Anheier. 1997. The third world's third sector in comparative perspective. *John Hopkins University Institute of Policy Studies.*

Salamon, Lester M., and S. Wojciech Sokolowski. 2004. *Global civil society: Dimensions of the nonprofit sector*. Vol. two. USA: Kumarian Press Inc.

Salamon, Lester M., and S. Toepler. 2000. The influence of the legal environment on the development of the nonprofit sector. 4th International Conference of ISTR, Dublin.

Steinberg, Richard. 2006. Economic theories of nonprofit organizations. In *The non-profit sector: A research handbook.* second ed., 117. New Haven & London: Yale University Press.

———. 1991. Does government spending crowd out donations? *Annals of Public and Cooperative Economic* 62, (4).

Weisbrod, B. A. 1988. *The nonprofit economy*. Cambridge, Massachusetts, London: Harvard University Press.

———. *The voluntary sector: An economic analysis*. Lexington, Massachusetts, Toronto: Lexington Books.

Young, E. 2000. Government failure theory. In *The nature of the nonprofit sector.*, ed. J. S. Ott. Westview, Boulder CO.: .