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An Empirical Study to Investigate the Size of Non-Governmental Organizations in OECD Countries

Summary: This study aimed to analyze the factors affecting the size of non-governmental organizations (NGOs) from a multinational perspective. Empirical analyses were conducted through econometric modeling, and the data of the 17 countries from 2003 to 2019 were used. The data was obtained from the World Bank and OECD database. We used advanced panel data estimation techniques (CUP-FM and CUP-BC) to obtain long-run coefficients. GDP per capita, general government final consumption expenditure, adult education at tertiary level, and Gini index growth declined grants by private agencies and NGOs' contribution to GDP (GinGDP) initially but after a threshold level, GinGDP increased with growth at later stages of these variables. Urban population growth, employment, and foreign population have reducing effect on the size of NGOs. The size of NGOs has bidirectional causality relationship between GDP per capita, adult population at tertiary education level, employment to population ratio, and Gini index; and unidirectional causality between urban population growth, general government final consumption expenditure, and foreign population.

Keywords: The size of non-governmental organizations, Third sector, Population heterogeneity, Econometric modeling, Economic and social factors.

JEL: C23, L30.

NGOs have attracted the attention of many researchers. There are many theories explaining the existence and properties of NGOs. The heterogeneity theory explains that NGOs play an essential role in meeting the demands of society that still need to be completed by the state or the private sector and in solving problems such as social services, education, poverty, and migration. The failure of the market and the government to provide certain goods and services to citizens is one of the main reasons NGOs emerge and grow (Burton A. Weisbrod 1977). The voluntary failure theory explains the widespread cooperation between the state and NGOs. In this theory, the dependency between the two sectors is a natural consequence. Because NGOs often fail to provide necessary and reliable sources. They may only reach some focus areas. A lack of professionalism can prevent them from solving complex social problems. Philanthropic paternalism problems may occur (Lester M. Salamon 1981, 1995; Salamon and Stefan Toepler 2015). The organizational ecology theory explains the emergence of NGOs with the complex dynamics of their environment (Howard E. Aldrich and Jeffrey Pfeffer 1976; Michael T. Hannan and John Freeman 1987). Many researchers

have investigated the factors that affect the size of NGOs and their effects on the economy. The studies show that NGO size is affected by various factors (Gregory D. Saxton and Michelle A. Benson 2005; Yoshiho Matsunaga, Naoto Yamauchi, and Naoko Okuyama 2010; Nobuko Kanaya, Hiromasa Takahashi, and Junyi Shen 2015; Gani Aldashev and Cecilia Navarra 2018; Hyun Y. Kim and Eun S. Kim 2018). The size of NGOs can be measured in different ways. There is no single accepted indicator in this regard. The number of organizations, number of people working in the industry, membership volume, final consumption expenditure of the NPISH (non-profit institutions serving households) as a percentage of the GDP are examples of used growth indicators of NGOs (Astrid Pennerstorfer and Alasdair Rutherford 2019). Grants by private voluntary agencies and non-governmental organizations are also an indicator of the size of NGOs. This indicator is defined as transfers made by private voluntary agencies and non-governmental organizations in cash, goods, or services for which no payment is required (OECD data). Identifying the factors affecting the size of NGOs will help to understand the nature of these organizations in countries. In this study, we aimed to investigate the factors affecting the size of the NGO at an international level. Therefore, the research question of this study is "What factors influence the size of the non-profit sector in OECD counties?"

Within this context, and based on the theoretical literature, eight different basic economic and social factors - income level, dependency on the working population, urbanization, employment to population ratio, general government final consumption expenditure, education level, Gini index, foreign population indicators - were selected from the aspects that could affect the size of NGOs. An empirical study was then conducted to determine the specific economic and social factors that influenced the size of NGOs of 17 OECD countries from data published between 2003 and 2019.

1. Literature Review

There is a wide range of terminology describing NGOs. In theory and practice they can be defined under many other different names such as third sector, non-profit sector, and voluntary sector. Whatever they are called, these organizations are used to meet the needs of citizens. They take a duty to assist the state. They provide especially the production of semi-public goods and services as said that are not produced by the state or the private sector, but that are needed by citizens. Although NGOs are defined under various names, their common features are described in the literature. The five basic features of NGOs are listed as institutionalization, self-governance, separation from government, non-profit distribution and certain degree of voluntarism (Salamon and Helmut K. Anheier 1997; Salamon, Leslie C. Hems, and Kathryn Chinnock 2000). If we want to explain these features a little, these organizations are organized and institutionalized, an irregular and impermanent group of temporarily assembled people cannot be seen as part of NGOs. These organizations are self-governing, they have internal working mechanism and are not controlled from the outside. These organizations are private but just because they are private don't mean they don't receive significant government support. The important point is that organizations are basically private in nature. These organizations do not distribute profits to their managers, when they make a profit, the income is directed to the basic mission of the institution. These

organizations include a certain amount of volunteerism, although it is not necessary for all the income of these organizations to be voluntary, even the voluntary work of their employees is sufficient to fulfill the volunteering criteria.

NGO size differs from country to country. The following Table 1 give a general idea about the size of NGOs in some countries by using the indicator grants by private voluntary agencies and NGOs. As can be seen in the table, United States, Canada, Germany are quite ahead of many other countries in terms of NGOs.

Table 1 Grants by Private Voluntary Agencies and NGOs (Mean of 2010-2019)

Country	Grants*
United States	32294.63
Canada	2239.94
Germany	1439.24
United Kingdom	694.77
Netherlands	636.74
Switzerland	480.18
Belgium	429.56
Ireland	343.14
Turkey	324.93
Korea, Rep.	294.95
Austria	176.33
Denmark	116.19
Italy	84.87
Sweden	61.37
Finland	44.69
Portugal	10.42
Luxembourg	8.05

Notes: Grants were measured in million USD constant prices, using 2018 as the base year.

Source: OECD (2021a)[1].

Many researchers have investigated the factors affecting the size of the sector. The theory of organizational ecology is one of the theories that explain the number and distribution of NGOs in society. This theory claims that organizations survive by being selected like living beings in nature. It seeks to explain the dynamics of NGOs in their environment. The aim is to understand the emergence, growth, and decline of these organizations. This theory can be used to understand how NGOs interact with other organizations and how they respond to changes in their environment (Aldrich and Pfeffer 1976; Hannan and Freeman 1987). Although it is accepted in many studies that the environmental factor is very important, the fact that the environmental effect alone does not provide sufficient explanation for the life of the organizations constitutes the objectionable aspect of the theory (Johan Frishammer 2006).

In Burton Weisbrod's theory of heterogeneity (1977) a positive relationship was established between demand heterogeneity in society and the size of NGOs. This theory was later criticized, developed from different perspectives and discussed by many

[1] **Organisation for Economic Co-operation and Development - OECD.** 2021a. Grants by Private Voluntary Agencies and NGOs (Indicator). https://data.oecd.org/drf/grants-by-private-agencies-and-ngos.htm (accessed October 03, 2021).

researches. For example, Henry Hansman (1986) found Weisbrod's theory insufficient to explain why excessive demand for semi-public goods is generated by NGOs rather than by the private sector and mentioned the importance of the element of trust in his study. John J. Corbin (1999), Matsunaga, Yamauchi, and Okuyama (2010), Jiahuan Lu (2016) have supported Weisbrod hypothesis. Rikki Abzug and Joy K. Turnheim (1998), Salamon and Anheier (1998) have argued that population heterogeneity has no effect on NGOs. Kanaya, Takahashi, and Shen (2015), Kim and Kim (2016), Stinj Van Puyvelde and William A. Brown (2016) found negative relationship between population heterogeneity and NGOs. Divergent results made it necessary to question the explanatory power of the theory of heterogeneity in influencing the size of NGOs.

Salamon (1987) shows that the government provides resources to NGOs therefore replace the government in the provision of various goods and services. According to Hansmann (1981), Herbert H. Simon (1993), Kanika Kapur and Weisbrod (2000), Jesse D. Lecy and David M. Van Slyke (2012), Lu and Chengxin Xu (2018), NGOs grow with the help of financial advantages, tax advantages, and subsidies. States can therefore use their powers to determine in which areas the NGOs will be concentrated.

Researchers who have classified and analyzed the disadvantages and benefits of NGOs to society, provide further literature on this topic. William W. Clohesy (2000) drew attention to the importance of altruistic behaviors in the emergence of NGOs. Edward L. Glaeser and Andrei Shleifer (1998) drew attention to the search for quality of individuals in the emergence of individuals. Margaret Gibelman and Sheldon R. Gelman (2000) evaluated corruptions in the sector. Scott Gates and Jeffrey Hill (1995) focused on the challenges in democratic accountability. Richard Steinberg (1991) explained the unfair competition created by the NGO sector. Michael Lipsky and Rathgeb S. Smith (1989) scrutinize the ruination of the private structure of foundations, due to increased state control. John Casey (2016) drew attention to consider whether organizations registered as NGO are operational or just merely being registered as organizations. Furthermore, Ralph M. Kramer (1981), Paul C. Light (1988), Stephne P. Osborne (1988), Salamon and Anheier (2000) analyzed the role of the NGO sector in bringing innovation to society, whereas Kramer (1981), Lipsky and Smith (1989), Elizabeth Boris and Rachel Mosher-Williams (1998), Adam Habib and Rupert Taylor (1999) examined its contribution to promoting participation and democracy.

The theoretical literature suggests that many factor affect the size of the NGO sector. The theoretical background of possible factors affecting the size of NGOs and our hypothesis are explained below.

2. Theoretical Background of Possible Factors Affecting the Size of NGOs

Income per capita

The higher income *per capita* is linked with larger NGO size as increased resources provide more resources for financing NGOs. And also a higher level of income *per capita* is associated with a higher level of heterogeneity that can cause variety of skills, creativity and innovation as a result of these factors it can lead to higher income and larger NGOs. Many researchers, thinking that there is relationship between the size of

the NGO sector and the income levels of individuals, have used income *per capita* as one of the indicators of heterogeneity in the society in their studies. Income levels of individuals are an important factor that can affect their altruistic behaviors. Weisbrod (1977), Corbin (1999), Primoz Pevcin (2012), Jindrich Spicka et al. (2017), A. Nil Tosun and A. Egzi Yilmaz (2023) found in their studies that there is a positive relationship between the level of income *per capita* and the size of NGOs. But Mirae Kim (2015) found a negative effect between income and NGO sector density in some fields such as health care, arts, culture, human services and humanities. Hence, following to theoretical literature and many empirical studies, we set up the following hypothesis:

H_1: Increases in *per capita* income will likely increase the size of NGOs.

Urbanization rate of countries

It is thought that there is a positive relationship between the urbanization rate of countries and the size of NGOs. Because urbanization increases the demand for services that NGOs can provide easily. It is accepted that the emergence of civil society is related to urbanization, which is an indicator of economic development. Economic indicators related to the rate of urbanization have been used in various studies as an indicator for the emergence and development of NGOs (Weisbrod 1977; Matsunaga and Yamauchi 2004; Lu and Xu 2018). Weisbrod (1977), Tosun and Yilmaz (2023) reveals that this effect will be positive with the demand heterogeneity theory. According to Weisbrod, as population heterogeneity increases, the need for NGOs will increase. However, there are also studies criticizing Weisbrod's demand heterogeneity hypothesis. For example, Matsunaga and Yamauchi (2004) and Gao Liu (2017) showed that the effect of the urbanization rate on the size of NGOs is negative. Hence, following to theoretical literature and many empirical studies, we set up the following hypothesis:

H_2: Increases in urbanization rate of countries will likely increase the size of NGOs.

Employment to population ratio, +15, total (%) (national estimate)

A high or low employment rate is seen as an important factor affecting the size of NGOs in a country. An increase in the employment rate may allow more people to contribute to NGOs. With these contributions, NGOs can expand their operations. Additionally, this can give to NGOs an opportunity to create new employment statuses. Employment to population ratio is also one of the indicators of heterogeneity in society, then this ratio may affect the size of NGOs. Many researchers have used employment rates in various ways in their studies as a factor that can affect the size of NGOs, for example Abzug and Turheim (1998), Laura R. Peck (2008), Pascale Joassart-Marcelli (2013), Eve E. Garrow and Samuel H. Garrow (2014), Kim (2015), Van Puyvelde and Brown (2016), and Liu (2017). Hence, following to theoretical literature and many empirical studies, we set up the following hypothesis:

H_3: Increases in employment to population ratio will likely increase the size of NGOs.

General government final consumption expenditure (% of GDP)

It is thought that higher government expenditure can decrease the size of NGOs. Because it can reduce the amount of funding available to NGOs. At the same time the government fulfills the duties expected from NGOs. Many researchers have used economic indicators related to government expenditure in various ways in their studies as a factor that can affect the size of NGOs, for example Erynn Beaton and Hyunseok Hwang (2016), Laurie E. Paarlberg and Takayuki Yoshioka (2016), Lecy and Van Slyke (2013). We chose General Government Final Consumption Expenditure ratio is one of the indicators that represent how much goods and services the state provides to individuals. Assuming that NGOs arise in the absence of government it might be expected that an arise in the general government final consumption expenditure may reduce the presence of NGOs. Hence, following to theoretical literature and many empirical studies, we set up the following hypothesis:

H_4: Increases in general government consumption expenditure will likely decrease the size of NGOs.

Education (adult education at tertiary level, % of 25-64 year)

The education ratio of a country can increase the size of NGOs. Education is an important factor for a country that can lead to economic growth. Education increase awareness of social issues and increases the demand for services from these organizations. It can also lead to more people being willing to donate to NGOs or to work volunteer for them. Education ratio is also one of the indicators of heterogeneity in society, then this ratio may affect the size of NGOs. In many of the studies, it is thought that the increase in the educational level of individuals will lead to diversity in the demands of individuals. Carmen Marcuello (1998), Peck (2008), Paul B. Stretesky et al. (2011), Van Pulvelde and Brown (2016), Liu (2017) and Edward C. Polson (2017) have used education ratios in their studies as a factor that can affect the size of NGOs Hence, following to theoretical literature and many empirical studies, we set up the following hypothesis:

H_5: Increases in education will likely increase the size of NGOs.

Gini index

Gini index is one of the factors that affect the size of NGOs. This index is a measure of income inequality. Higher income inequality can lead to more demand from NGOs. This may be an indication that NGOs will grow as income inequality increases in society. Income inequalities are also one of the important indicators of heterogeneity in society. It is accepted that as the Gini coefficient increases, income inequality in the society increases. Many researchers have included income inequality indicators in their studies as an influencing factor for NGOs, for example Wolfgang Bielefeld, James C. Murdoch, and Waddell Paul (1997), Kim (2015), Liu (2017). Hence, following to theoretical literature and many empirical studies, we set up the following hypothesis:

H_6: Increases in Gini index will likely increase the size of NGOs.

Foreign population, total % of population

It is accepted that an increase in the foreign population in a country can cause to an increase in the size of NGOs. This is because a larger foreign population probably creates more demand for the services that NGOs mostly provide. Such as basic needs food, shelter, health, education or advocacy for their rights and help for a legal issue. Foreign population ratio is one of the indicators of heterogeneity in society, then this ratio may affect the size of NGOs. Many researchers have used foreign population ratios in various ways in their studies as a factor that can affect the size of NGOs, for example Matsunaga and Yamauchi (2004), Çağla Okten and Una O. Osili (2004), Peck (2008), Paarlberg and Sheldon Gen (2009), Murat Onder (2011), Stretesky et al. (2011), Pevcin (2012), Horton D. Smith (2013), Van Puyvelde and Brown (2016), Liu (2017), Polson (2017). Hence, following to theoretical literature and many empirical studies, we set up the following hypothesis:

H_7: Increases in foreign population will likely increase the size of NGOs.

In this study an empirical study was then conducted to determine the specific economic and social factors that affected the size of NGOs of 17 OECD countries, from data published between 2003 and 2019. From this perspective, we tested eight hypotheses above.

3. Methodology

3.1 Data Description

This study used grants by private (voluntary) agencies and NGOs, which were collected from the OECD database (2021a); GDP (constant LCU); GDP *per capita* (constant LCU); urban population growth (annual %); employment to population ratio (% of 15+ year-olds); general government final consumption expenditure (% of GDP); adult education at tertiary level (% of 25-64 year-olds); Gini index (World Bank estimate); and foreign population (% of population), which was collected from the World Bank database (2021a[2], b[3], c[4], d[5]) and OECD database (2021b[6], c[7]). Data from 2003 to 2019 were analyzed.

Grants by private (voluntary) agencies and NGOs, in million USD constant prices, were used by using 2018 as the base year. GDP (constant LCU) and GDP *per capita* (constant LCU) were converted to the constant 2018 by dividing the 2018

[2] **Word Bank.** 2021a. Urban Population Growth. https://data.worldbank.org/indicator/SP.URB.GROW (accessed April 20, 2021).
[3] **Word Bank.** 2021b. GDP and GDP per capita - OECD Members. https://data.worldbank.org/indicator/NY.GDP.PCAP.CN?locations=OE (accessed April 20, 2021).
[4] **Word Bank.** 2021c. Employment to Population Ratio. https://data.worldbank.org/indicator/SL.EMP.TOTL.SP.NE.ZS (accessed April 20, 2021).
[5] **Word Bank.** 2021d. General Government Final Consumption Expenditure. https://data.worldbank.org/indicator/NE.CON.GOVT.ZS (accessed April 20, 2021).
[6] **Organisation for Economic Co-operation and Development.** 2021b. Enrolment Rate in Secondary and Tertiary Education. https://data.oecd.org/students/enrolment-rate-in-secondary-and-tertiary-education.htm (accessed September 24, 2021).
[7] **Organisation for Economic Co-operation and Development.** 2021c. Foreign Population. https://data.oecd.org/migration/foreign-population.htm (accessed September 24, 2021).

average dollar exchange rate. The grants by private (voluntary) agencies and NGOs contribution to GDP (GinGDP ‰) data were calculated by dividing the grants by private (voluntary) agencies and NGOs by GDP (constant 2018) (Table 2).

Table 2 Explanation of the Variables

Variables	Calculation
GDP	billion USD constant prices, using 2018 as the base year GDP(constant LCU) = GDP(constant LCU) / 2018 average dollar exchange rate
GinGDP	grants/GDP (constant 2018)*1000
GDP per capita	thousand USD constant prices, using 2018 as the base year GDP per capita(constant LCU) = GDP per capita(constant LCU) / 2018 average dollar exchange rate
Urban population growth	urban population growth (annual %)
Expenditure	general government final consumption expenditure / GDP*100
Education	adult education level Tertiary / 25-64-year-old population *100
Employment	15+ population that is employed / 15 population*100
Gini index	"A Lorenz curve plots the cumulative percentages of total income received against the cumulative number of recipients, starting with the poorest individual or household. The Gini index measures the area between the Lorenz curve and a hypothetical line of absolute equality, expressed as a percentage of the maximum area under the line." (World Bank).*
Foreign population	foreign population / total population*100

Notes: GinGDP - Grants by private agencies and NGOs' contribution to GDP.

Source: World Bank (2021e)[8].

As there were only 17 countries had the data on grants by private (voluntary) agencies and NGO and the other variables, 17 of 38 OECD countries were included in the study. We used the data from Austria, Belgium, Canada, Denmark, Finland, Germany, Ireland, Italy, Korea, Rep., Luxembourg, Netherlands, Portugal, Sweden, Switzerland, Turkey, the United Kingdom, and the United States. The descriptive statistics (mean, standard deviation, median, minimum, and maximum values) for the variables are summarized in Table 3.

Table 3 Descriptive Statistics of Variables

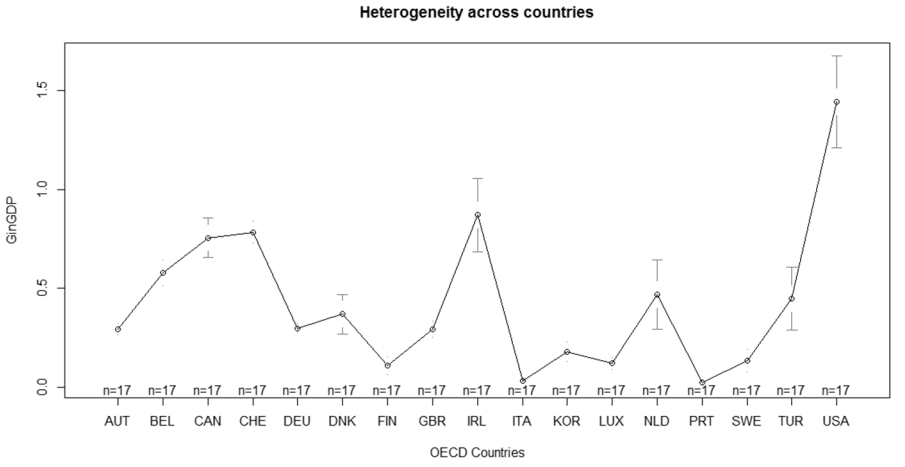
Variables	Mean±SD	[Min-Max]	Median
Grants (million USD)	2017.83±6485.53	[1.29 – 36939.19]	246.100
GDP (billion USD)	2063.03±3797.39	[47.43 – 21433.23]	627.500
GinGDP (‰)	0.447±0.427	[0.004 – 1.985]	0.296
GDP per capita (thousand USD)	58.44±31.09	[1.48 – 185.57]	56.710
Urban population growth (%)	1.03±0.68	[-1.60 – 3.22]	0.940
Expenditure (%)	19.16±4.37	[0.88 – 27.93]	19.520
Education (%)	33.17±10.61	[9.65 – 59.37]	34.090
Employment (%)	56.80±6.48	[26.87 – 68.34]	58.490
Gini index	32.46±4.82	[24.90 – 65.05]	31.700
Foreign population (%)	9.97±10.17	[0.10 – 48.80]	7.000

Notes: SD - standard deviation; GinGDP - grants by private agencies and NGOs' contribution to GDP; Urban - urban population growth; Expenditure - general government final consumption expenditure; Education - adult population at tertiary education level; Employment - employment to population ratio; GiniIndex - Gini index (World Bank estimate); Foreign - foreign population.

Source: Authors' calculations.

[8] **World Bank.** 2021e. https://data.worldbank.org/indicator/SI.POV.GINI (accessed April 20, 2021).

The mean GinGDP (‰) by OECD countries is summarized in Figure 1. The highest GinGDP (‰) values were observed in the United States (1.44±0.45), Ireland (0.87±0.36), and Switzerland (0.87±0.36), respectively. The lowest values were observed in Italy (0.03±0.01), Portugal (0.02±0.02), and Finland (0.11±0.09).



Source: Authors' calculations.

Figure 1 GinGDP (‰) Values by OECD Countries

The econometric model is given below.

$$ln\text{GinGDP}_{it} = \alpha_{it} + \beta_1 ln\text{GDP} + \beta_2 ln\text{GDP}^2 + \beta_3 ln\text{Urban} + \beta_4 ln\text{Exp} + \beta_5 ln\text{Exp}^2 + \beta_6 ln\text{Edu} + + \beta_7 ln\text{Edu}^2 + \beta_8 ln\text{Emp} + \beta_9 ln\text{GI} + \beta_{10} ln\text{GI}^2 + \beta_{11} ln\text{Foreign} + \varepsilon_{it},$$

where $i = 1,2, \ldots 17$ and $t = 1,2, \ldots ,17$. Here, β is the unknown slope coefficients, and ε_{it} is the error term. So on the statistical analysis, GDP indicates GDP *per capita*, Urban indicates urban population growth, Exp indicates general government final consumption expenditure, Edu indicates adult population at tertiary education level, Emp indicates employment to population ratio, GI indicates Gini index (World Bank estimate), and Foreign indicates foreign population. The superscripts denote the quadratic form of the variables. The natural logarithm of all the variables were used.

3.2 Statistical Analysis

Our statistical analysis employed to test multicollinearity, panel homogeneity and cross-section dependence, followed by the unit root and co-integration tests. Then, we represented the CUP-FM and CUP-BC estimators.

Testing the multicollinearity, panel homogeneity, and cross-section dependence

Variance inflation factors (VIF) and tolerance values were computed to test the presence of multicollinearity. Because the VIF values of lnUrban and lnEmp were lower than 5 and the tolerance values were higher than 0.20, it can be said that these variables

were not suffer from multicollinearity problem (Table 4). On the other hand, other variables suffered from multicollinearity problem. Thus, we carried out orthogonal transformation (Gary H. McClelland et al. 2017). After the transformation, the absence of collinearity or multicollinearity was confirmed by VIF and tolerance values.

Table 4 The VIF and Tolerance Values

Variables	Before transformation		After transformation	
	VIF	Tolerance	VIF	Tolerance
lnGDP	67.97	0.0105	1.00	1.00
$lnGDP^2$	44.67	0.0230	1.00	1.00
lnUrban	1.43	0.6970	1.00	1.00
lnExp	50.11	0.0200	1.00	1.00
$lnExp^2$	47.94	0.0210	1.00	1.00
lnEdu	377.58	0.0030	1.00	1.00
$lnEdu^2$	356.34	0.0030	1.00	1.00
lnEmp	2.37	0.4220	1.00	1.00
lnGI	3527.41	0.0003	1.00	1.00
$lnGI^2$	3546.00	0.0003	1.00	1.00
lnForeign	6.77	0.1480	1.00	1.00

Notes: GDP - GDP per capita; Urban - urban population growth; Exp - general government final consumption expenditure; Edu - adult population at tertiary education level; Emp - employment to population ratio; GI - Gini index (World Bank estimate); Foreign - foreign population.

Source: Authors' calculations.

The panel homogeneity test is used to test the homogeneity of the slopes (M. Hashem Pesaran and Takashi Yamagata 2008). The panel homogeneity test showed the heterogeneity of the slopes ($\Delta = 3.630$, $p < 0.001$; $\Delta_{adj} = 7.484$, $p < 0.001$).

Peseran (2004) CD tests is used to test the cross-section dependence whereby all units in the same cross-section (country) are correlated. The null hypothesis is "cross-section independence". If the null hypothesis is rejected, this suggests that there is cross-sectional dependence in the data and that it should be accounted for in the analysis. The CD test showed the cross-section independence of lnGinGDP ($p = 0.641$; Table 5); showed the cross-section dependence of all other variables ($p < 0.10$; Table 5).

Table 5 The Peseran CD Test Results

	lnGinGDP	lnGDP*	$lnGDP^2$	lnUrban	lnExp	$lnExp^2$
CD statistic	0.466	41.420*	28.675*	1.773+	12.213*	11.940*
p-value	0.641	<0.001	<0.001	0.076	<0.001	<0.001
	lnEdu	**$lnEdu^2$**	**lnEmp**	**lnGI**	**$lnGI^2$**	**lnForeign**
CD statistic	19.786*	9.655*	11.763*	1.661	6.113*	5.496*
p-value	<0.001	<0.001	<0.001	0.097+	<0.001	<0.001

Notes: GinGDP - grants by private agencies and NGOs' contribution to GDP; GDP - GDP per capita; Urban - urban population growth; Exp - general government final consumption expenditure; Edu - adult population at tertiary education level; Emp - employment to population ratio; GI - Gini index (World Bank estimate); Foreign - foreign population. H_0: Cross-section independence, * $p < 0.01$; ** $p < 0.05$; + $p < 0.10$.

Source: Authors' calculations.

The unit root tests

The panel unit root tests by Gangadharrao Soundalyarao Maddala and Shaowen Wu (1999) and Pesaran (2007) CIPS were applied to test for unit roots in the panel data. While Maddala and Wu's test assumes cross-section independence, Pesaran's CIPS test assumes cross-section dependence. Thus, we considered the Maddala and Wu's test result for lnGinGDP; and we considered Pesaran's CIPS test results for all other variables.

lnGinGDP, lnGDP, $lnGDP^2$, lnExp, $lnExp^2$, lnEdu, $lnEdu^2$, lnEmp, lnGI, and $lnGI^2$ were found as stationary at least one of the tests ($p < 0.05$; Table 6); lnUrban and lnForeign were found as non-stationary ($p > 0.05$; Table 6). Thus, it is necessary to apply the co-integration tests to control the spurious regression for the estimates.

Co-integration tests

We applied Joakim Westerlund's (2008) ECM co-integration tests and we conclude that the panels are co-integrated ($DH_g = 4.784$, $p < 0.001$; $DH_p = 3.209$, $p < 0.001$) and there was a long-run relationship between the variables.

Table 6 The Unit Root Test Results

Variables	Maddala and Wu's test		Pesaran's CIPS test	
	Without trend	*With trend*	*Without trend*	*With trend*
lnGinGDP	102.240(<0.001)*	102.685(<0.001)*	-3.718(<0.001)*	-3.649(<0.001)*
lnGDP	22.777(0.929)	61.518(0.003)*	-2.158(0.015)**	-0.855(0.196)
$lnGDP^2$	38.152(0.286)	62.206(0.002)*	-0.130(0.448)	-1.641(0.050)**
lnUrban	36.970(0.333)	23.352(0.915)	2.251(0.988)	4.415(0.999)
lnExp	32.043(0.564)	43.774(0.122)	-2.862(0.002)*	-6.617(<0.001)*
$lnExp^2$	19.846(0.975)	31.657(0.583)	-4.176(<0.001)*	-8.407(<0.001)*
lnEdu	64.154(0.001)*	124.712(<0.001)*	-5.492(<0.001)*	-4.162(<0.001)*
$lnEdu^2$	32.143(0.559)	76.520(<0.001)*	0.586(0.721)	-3.000(0.001)*
lnEmp	13.772(0.999)	15.473(0.997)	-1.015(0.155)	-2.916(0.002)*
lnGI	67.292(0.001)*	156.204(<0.001)*	-0.940(0.174)	-4.929(<0.001)*
$lnGI^2$	67.543(0.001)*	87.083(<0.001)*	-2.679(0.004)*	-4.815(<0.001)*
lnForeign	74.478(<0.001)*	48.021(0.056)+	1.040(0.851)	2.236(0.987)

Notes: GinGDP - grants by private agencies and NGOs' contribution to GDP; GDP - GDP per capita; Urban - urban population growth; Exp - general government final consumption expenditure; Edu - adult population at tertiary education level; Emp - employment to population ratio; GI - Gini index (World Bank estimate); Foreign - foreign population. H_0: Series is I(1), * $p < 0.01$; ** $p < 0.05$; + $p < 0.10$.

Source: Authors' calculations.

CUP-FM and CUP-BC results

CUP-FM (continuously updated FMOLS) and CUP-BC (continuously updated bias corrected FMOLS) estimators were developed by Jushan Bai, Chihwa Kao, and Serena Ng (2009). These estimators are robust against the cross-sectional dependency, heteroscedasticity, endogeneity, and the variables were stationary/non-stationary. Because there were cross-sectional dependency and the variables were non-stationary, we used the CUP-FM (continuously updated FMOLS) and CUP-BC (continuously updated

bias corrected FMOLS) estimators developed by Bai, Kao, and Ng (2009). The results were presented in Table 7.

The CUP-FM and CUP-BC results in Table 7 indicated that all variables, except for lnForeign in CUP-FM, were statistically significant ($p < 0.01$; Table 7).

GDP *per capita* was found to be significant at the 1% level and had negative effect on GinGDP. A 10.000$ increase in GDP *per capita* decreases GinGDP approximately by 0.10-0.17‰. The quadratic GDP (GDP^2) had positive effect on GinGDP. 0.24-0.33‰ increase in GinGDP was due to 10.000$ increase in GDP^2. These negative and positive effects of GDP and GDP^2 to GinGDP showed the presence of U-shaped growth-GinGDP. It implies that economic growth declined GinGDP initially but after a threshold level, GinGDP was accompanied with economic growth at later stages of economic development.

Urban population growth was found to be significant at the 1% level. It had negative effect on GinGDP. A 1% increase in urban population growth decreases GinGDP approximately by 0.03‰.

Table 7 Estimation of the Long-Run Coefficients

Variables		CUP-FM	CUP-BC
lnGDP	Estimate	-0.166*	-0.100*
	t-value	-5.173	-3.472
$lnGDP^2$	Estimate	0.330*	0.241*
	t-value	7.187	5.248
lnUrban	Estimate	-0.032*	-0.025*
	t-value	-4.312	-3.385
lnExp	Estimate	-0.104*	-0.077*
	t-value	-5.127	-3.664
$lnExp^2$	Estimate	0.245*	0.244*
	t-value	5.888	5.656
lnEdu	Estimate	-0.209*	-0.229*
	t-value	-8.578	-8.972
$lnEdu^2$	Estimate	0.238*	0.237*
	t-value	9.742	9.117
lnEmp	Estimate	-0.142*	-0.093*
	t-value	-4.342	-2.770
lnGI	Estimate	-0.307*	-0.313*
	t-value	-11.468	-11.040
$lnGI^2$	Estimate	0.198*	0.260*
	t-value	8.762	10.723
lnForeign	Estimate	-0.010	-0.042*
	t-value	-0.998	-3.903

Notes: GDP - GDP per capita; Urban - urban population growth; Exp - general government final consumption expenditure; Edu - adult population at tertiary education level; Emp - employment to population ratio; GI - Gini index (World Bank estimate); Foreign - foreign population. * $p < 0.01$; ** $p < 0.05$; + $p < 0.10$.

Source: Authors' calculations.

General government final consumption expenditure (% of GDP) was found to be significant at the 1% level. It had negative effect on GinGDP. A 1% increase in general government final consumption expenditure decreased GinGDP by 0.08-

0.10‰. The quadratic expenditure (Exp^2) had positive effect on GinGDP. 0.24‰ increase in GinGDP is due to 1% increase in Exp^2. These negative and positive effects of Exp and Exp^2 to GinGDP showed the presence of U-shaped growth-GinGDP. It implies that expenditure growth declined GinGDP initially but after a threshold level, GinGDP increased with growth at later stages of expenditures.

Adult population at tertiary education level was found to be significant at the 1% level and had negative effect on GinGDP. A 1% increase in adult population at tertiary education level decreased GinGDP by 0.21-0.23‰. The quadratic education (Edu^2) had positive effect on GinGDP. 0.24‰ increase in GinGDP is due to 1% increase in the Edu^2. These negative and positive effects of Edu and Edu^2 to GinGDP showed the presence of U-shaped growth-GinGDP. It implies that the growth in adult population at tertiary education level declines GinGDP initially but after a threshold level, GinGDP increased with growth at later stages of education.

Employment to population ratio (% of 15+ year-olds) was found to be significant at the 1% level. It had negative effect on GinGDP. A 1% increase in employment to population ratio decreased GinGDP by 0.09-0.14‰.

Table 8 The Panel Causality Results

Null hypothesis	Estimate (*p*-value)	Decision
lnGDP does not cause lnGinGDP	4.745 (<0.001)*	lnGDP↔lnGinGDP (bidirectional)
lnGinGDP does not cause lnGDP	12.894 (<0.001)*	
$lnGDP^2$ does not cause lnGinGDP	5.311 (<0.001)*	$lnGDP^2$↔lnGinGDP (bidirectional)
lnGinGDP does not cause $lnGDP^2$	11.311 (<0.001)*	
lnUrban does not cause lnGinGDP	2.269 (0.023)**	lnUrban→lnGinGDP (unidirectional)
lnGinGDP does not cause lnUrban	0.583 (0.559)	
lnExp does not cause lnGinGDP	7.060 <0.001)*	lnExp→lnGinGDP (unidirectional)
lnGinGDP does not cause lnExp	1.211 (0.226)	
$lnExp^2$ does not causeln GinGDP	5.340 <0.001)*	$lnExp^2$→lnGinGDP (unidirectional)
lnGinGDP does not cause $lnExp^2$	1.289 (0.197)	
lnEdu does not cause lnGinGDP	4.026 (0.001)*	lnEdu↔lnGinGDP (bidirectional)
lnGinGDP does not cause lnEdu	8.889 (<0.001)*	
$lnEdu^2$ does not cause lnGinGDP	4.069 (<0.001)*	$lnEdu^2$↔lnGinGDP (bidirectional)
lnGinGDP does not cause $lnEdu^2$	16.803 (<0.001)*	
lnEmp does not cause GinGDP	7.349 (<0.001)*	lnEmp↔lnGinGDP (bidirectional)
GinGDP does not cause lnEmp	3.379 (0.001)*	
lnGI does not cause lnGinGDP	2.791 (0.005)*	lnGI↔lnGinGDP (bidirectional)
lnGinGDP does not cause lnGI	6.337 (<0.001)*	
$lnGI^2$ does not cause lnGinGDP	2.775 (0.006)*	$lnGI^2$↔lnGinGDP (bidirectional)
lnGinGDP does not cause $lnGI^2$	6.333 (<0.001)*	
lnForeign does not cause lnGinGDP	2.137 (0.033)**	lnForeign→lnGinGDP (unidirectional)
lnGinGDP does not cause lnForeign	1.142 (0.136)	

Notes: GDP - GDP per capita; Urban - urban population growth; Exp - general government final consumption expenditure; Edu - adult population at tertiary education level; Emp - employment to population ratio; GI - Gini index (World Bank estimate); Foreign - foreign population. * $p < 0.01$; ** $p < 0.05$; + $p < 0.10$.

Source: Authors' calculations.

Gini index (World Bank estimate) was found to be significant at 1% level and had negative effect on GinGDP. A unit increase Gini index decreased GinGDP by 0.31‰. The quadratic Gini index (GI^2) had positive effect on GinGDP. 0.20-0.26‰ increase in GinGDP is due to one-unit increase in GI^2. These negative and positive effects of GI and GI^2 to GinGDP showed the presence of U-shaped growth-GinGDP. It implies that Gini index declines GinGDP initially but after a threshold level, GinGDP increased with growth at later stages of Gini index.

Foreign population was found to be significant at the 1% level by CUP-BC and had negative effect on GinGDP. A 1% increase in foreign population ratio deceased GinGDP by 0.04‰.

The causality tests

We applied the Elena-Ivona Dumitrescu and Christophe Hurlin (2012) panel causality test to reveal the causal relationships between the variables and the results were summarized in Table 8. Bidirectional causality was found between lnGinGDP and lnGDP, $lnGDP^2$, lnEdu, $lnEdu^2$, lnEmp, lnGI, and $lnGI^2$. It suggests any policy impacting GDP *per capita*, adult population at tertiary education level, employment to population ratio, and Gini index may significantly impact GinGDP, the reverse is also true. However, the results showed unidirectional causality between lnGinGDP and lnUrban, lnExp, $lnExp^2$, and lnForeign. Any policy in urban population growth, general government final consumption expenditure, and foreign population may cause changes in GinGDP; however, the reverse is not valid.

4. Results

NGOs are of great importance in terms of meeting social needs. They fill the gap left by state and private sector. Therefore, the power of state and private sector in a country can affect the size of the need for NGOs. Apart from this, the diversity in the demands of citizens, that are also affected by many factors, also increases the need for NGOs.

This study focused on the factors affecting the size of the NGO at an international level. Our purpose was to investigate some factors affecting the development of NGOs at an international level. Within this context, and based on the theoretical literature, seven different basic economic and social factors - income level, urbanization, employment to population ratio, general government final consumption expenditure, education level, Gini index, foreign population indicators - were selected from the aspects that could affect the size of NGOs. The quadratic forms of income level, general government final consumption expenditure, education level, and Gini index were also considered. Resultantly, the effect of these factors on the size of NGOs in 17 OECD countries, were empirically analyzed.

The data was obtained from the World Bank and OECD database. Advanced panel data analyses were conducted using these variables from the period between 2013 and 2019. Empirical analyses were conducted through econometric modeling, and panel data from the 17 countries were estimated. Unit root tests were showed that GinGDP, GDP *per capita*, general government final consumption expenditure, employment to population ratio, education level, and Gini index were found as stationary,

while urbanization and foreign population were found as non-stationary. Then, Westerlund's (2008) co-integration test indicated a long-run equilibrium relationship between the variables. Thus, we used advanced panel data estimation techniques (CUP-FM and CUP-BC) to obtain long-run coefficients. These techniques are more robust panel data estimators and considers the cross-sectional dependence, heteroscedasticity, endogeneity. The estimation results can be summarized in four points: (i) GDP *per capita*, general government final consumption expenditure, adult education at tertiary level, and Gini index growth declined GinGDP initially but after a threshold level, GinGDP increased with growth at later stages of these variables. (ii) Urban population growth, employment, and foreign population have reducing effect on the size of NGOs. (iii) There are bidirectional causality relationship between the size of NGOs and GDP *per capita*, adult population at tertiary education level, employment to population ratio, and Gini index. (iv) There are unidirectional causality relationships between the size of NGOs and urban population growth, general government final consumption expenditure, and foreign population.

It is not accepted-reducing effect.

H_2: Increases in urbanization rate of countries will likely increase the size of NGOs.

H_3: Increases in employment will likely increase the size of NGOs.

H_7: Increases in foreign population will likely increase the size of NGOs.

It is accepted after a threshold level.

H_1: Increases in GDP *per capita* will likely increase the size of NGOs.

H_5: Increases in Education will likely increase the size of NGOs.

H_6: Increases in Gini index will likely increase the size of NGOs.

It is accepted before a threshold level.

H_4: Increases in general government consumption expenditure will likely decrease the size of NGOs.

Tosun and Yilmaz (2023) examined the size of NGOs with 3 variables with the perspective of Weisbrod's heterogeneity theory, found that GDP *per capita* and urbanization rate of countries positively affected the size of NGOs. In this study we examined the size of NGOs by associating them with seven factors, with the perspective of the theory of organizational ecology and Weisbrod's theory of heterogeneity. Unlike the previous study, when other variables were involved our analysis gave a different result as the urbanization rate of countries adversely affected the size of NGOs. This result showed us that NGOs interact with environmental factors in accordance with the explanations of organizational ecology theory and their size is affected by changes in their environment.

5. Discussion

The changing world, economic developments, increasing digitalization, urbanization, technological advances, and migration waves are changing the support provided to

NGOs. This study revealed the need for some policies in today's conditions. The results imply that income level, income inequality and education are essential factors for the being of NGOs. If countries want to increase NGOs, they should follow policies that improve income distribution and increase *per capita* income and education. Communities support NGOs only after a certain income level and education. Increases in education level support NGOs, and NGO developments impact education level. Therefore, States' economic growth-oriented policies and programs that support lifelong education will support NGOs.

This study also demonstrated the importance of other social factors such as urbanization rates, foreign population and employment. NGOs decrease as the urbanization rate, foreign population, and employment increase. There could be many reasons for this situation. For example, the rise in urbanization rates, the increase in the number of foreign people living in cities due to migration waves, and the increase in employment have made individuals residing in communities more individualistic. In addition, increasing digitalization and social media opportunities have paved the way for individuals to deliver their donations directly to those in need without intermediaries. These developments are pushing individuals away from NGOs. For this reason, NGOs need to introduce themselves. They can use more digital platforms to reach more people. In addition, they need to convince people about their reliability. Another policy proposal may be to prevent increasing urbanization by strengthening local governments. As a result, people in small cities can be more aware of and sensitive to each other's problems.

A limitation of this study was the difficulty in finding a common indicator in comparative studies, as the definition of NGOs differs in each country. For this reason, in order to measure the size of NGOs in different countries, it is used as a common indicator based on grants.

Future studies can examine the socio-economic reasons behind our conclusions. This study pointed out the world's economic and social conditions significantly affecting NGOs. Therefore, researchers should examine these changes in multi-input and multi-output analyses in future studies.

Endnotes

From the variety of synonyms available, we preferred using the term NGOs in this manuscript.

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