

정부 특성이 국민 삶의 질에 미치는 영향 분석

Effects of Government Characteristics on the Quality of Life*

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This article examines how the characteristics of a government defined as quality, size, and function influence the quality of life of its citizens by applying fuzzy-set analysis on data from 30 OECD counties. The results show that quality of life is enhanced when the quality of government, or its policy effectiveness, is maintained at a certain level, while increase in government size, spending, and intervention has a negative impact. Based on the premise that the government's quality and size are at a certain optimal level, quality more likely increases when the economy is stabilized by the market mechanism and security is guaranteed both internally and externally than when the government is actively involved in producing public goods. Thus, without economic and social stability, expansion of social policy is unlikely to have a positive impact on improving quality of life as was intended.

Keywords: government quality, government size, government function, quality of life, fuzzy-set

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I. Introduction

The goal of a policy is to improve quality of life. Policies advance society and individual life and raise the level of happiness (Rossi, Lipsey, & Freeman, 2004). Previously, discussion on life satisfaction and quality of life have been around economic factors based on indexes of dominant statistics such as GDP, rate of economic growth, etc. however more recently, non-economic factors figure in the discussions. As systems and configurations surrounding individuals are affected by government and governmental activities, such activities impact life satisfaction and happiness, and thus, the advancement of quality of life can be considered the ultimate goal of governmental activities (Han, Lim, & Kim, 2017).

Various studies have proved that quality of life and happiness are tied to the quality of government (Helliwell & Huang, 2008; Ott, 2011; Samanni & Holmberg, 2010; Tavits, 2007). The global competitive index is an important standard in research that compares nations. Studies on the relation between the size of government and quality of life (Bjørnskov et al., 2007; Hessami, 2010; Ott, 2005; Scully, 2001) and on how the quality and size of the government affect quality of life have also been conducted by integrating the aforementioned findings (Kim, Choi, Jung, & Moon, 2018).

Hence, as mentioned above, by conceptualizing the characteristics of government with its quality and size, multiple research attempts have been made to analyze how government characteristics affect quality of life. However, research on the relation between the function of a government, defined as a subordinate concept comprising the characteristics of the government, and quality of life is less common. There are limitations to identifying the level of positive or negative effects certain governmental characteristics have on a nation's quality of life from the quality and size of the government. Therefore, there is a need to analyze the influence of the function of government to observe the effects of its policy implementation on enhancing quality of life.

The function of a government is defined by the priority given to the

policies it implements, which is reflected in the budget allocated to those policies related to the specific functions. In other words, from the budget allocation towards production of public goods, police function, or facilitative function (Salamon, 2002), the primary function of a government can be inferred. This study defines the characteristics of a government as its quality, size, and function, and discusses how these influence quality of life. To do this, the quality of government is defined as its effectiveness; the size is defined as the proportion of its spending relative to the GDP; and the function refers to the proportion of the budget allocated to production of public goods, police function, and facilitative function.

Fuzzy-set analysis is an alternative method to overcome the limitations of a small sample (Small-N) in comprehending causal relations in a given result (Choi, 2009; Ragin, 2000). This study uses the Fuzzy-Set/Qualitative Comparative Analysis (FsQCA) method to analyze how the characteristics (quality, size, function) of the governments of 30 OECD nations, the subjects of analysis, influence quality of life in their respective nations. It also attempts to deduce policies that a government needs to prioritize to effectively and efficiently enhance quality of life.

II. Theoretical background

1. Characteristics of government

(1) Quality of government

Various concepts such as the effectiveness and efficiency of a government, government capacity, or governance have been used to study the quality or performance of a government's policies or its administration. In the late 1980s, the quality of government began to be viewed from an economic development and social welfare perspective (Acemoglu & Robinson, 2008), and presently, there are studies focusing on politics and the bureaucratic structure (Dahlberg, Dahlström, Noreel, & Teorell, 2011).

Research on the quality of government has been based on concepts such as governance, good governance, national strength, and good government. In earlier studies, the quality of government was considered equivalent to governance, and governments that helped economic growth were considered high quality (La Porta, Lopez-de-Silanes, Shleifer, & Vishny, 1999). Knack (2002) measured the quality of government from an economic and administrative perspective. The effectiveness of government was also based on its strength as the decisive factor in government quality. Hence, concepts of administrative strength such as financial and asset management, strategic and personnel management, information technology management, organization management and cooperative systems were used to measure government quality (Choi, 2012).

Rothstein and Teorell (2008), however, point out the ambiguity of good governance and the difficulties in the operationalization and setting up of indexes, emphasizing impartiality as the core factor in deciding the quality of government. Impartiality is a measure and evaluation of both access to and exertion of government authority. Rothstein and Teorell (2008) argue that the quality of government depends on how national authority is built and exercised. A good government must identify citizens' needs and respond accordingly (Rice, 2001). From this perspective, government's effectiveness and rule of law are essential for measuring the quality of government (Do, 2015).

The 'Governance Indicator,' provided by the World Bank, has been used so far in previous research to measure quality of government or to represent 'good government' (Bae, 2014; Kim, 2012; Kim et al., 2018; Park & Jang, 2012). In the research of Park et al. (2012), a good government is defined as an effective, law-abiding, and corruption-controlled, and the quality of government is evaluated and measured three dimensionally using the following criteria: government effectiveness, rule of law, and control of corruption. Kim (2012)'s study clearly distinguishes between the concepts of 'quality of government' and characteristics of political systems, focusing on the execution of policies, delivery of public services and associated government

organizations and mechanisms, and excludes the perspective of political systems and the governance index. In other words, among the governance indexes, accountability and political stability are excluded, and the 'quality of government' variable comprises government effectiveness, quality of control, rule of law, and control of corruption. Bae (2014)'s study also uses the World Bank's definition of governance, taking participation and accountability, political stability, government effectiveness, rule of law, and control of corruption as factors comprising the quality of government. Kim et al. (2018) used the 'Governance Index' of the World Bank to define 'Quality of Government' using three variables: government effectiveness, rule of law, and control of corruption.

(2) Size of government

As part of research related to political reform, studies have been conducted on the size of government post the 1990s, wherein proposals put forth suggest that to identify government characteristics, its strength, size and function must be examined (Moon & Ju, 2007). A government's budget size indicates whether it aims to be a 'small government', which reduces the role of the government and emphasizes the role of the market, or be a 'big government' and make active interventions (Do, 2016).

Studies have analyzed the effects of government size, such as budget and spending, on life satisfaction (Bjørnskov et al., 2007; Ott, 2005; Scully, 2001; Yamamura, 2011). Bjørnskov et al. (2007) show that higher government spending equates to a lower quality of life, a finding similar to Ott (2011)'s study, according to which, a big and good government has a positive effect on happiness levels while a big and bad government does not. Furthermore, Scully (2001)'s research suggests that even after an appropriate level of government spending, quality of life decreases due to the waste of budget, and Yamamura (2011)'s case study of Japan shows that the size of government is a decisive factor in happiness.

(3) Function of government

In theoretically defining government functions, Offe (1975) categorizes functions of a state into production and allocation, which are a type of government intervention. The allocation function involves using resources and power to create and maintain conditions for the formation of private property and the production function provides a framework for creation and accumulation and the resources required for both.

Clark and Dear (1984) view the activities conducted at the level of nation-state and justify them as its function. They argue that there are basic universal functions conducted regardless of time and space and propose that the consensus function, production function, integration function, and the executive function are the four basic functions of a capitalist nation. Dimock et al. (1958) categorizes government functions into inherent and additional functions, wherein the latter refer to the functions performed universally by all types of governments regardless of the era or the characteristics. As per this, all the four functions mentioned by Clark and Dear (1984) fall under the inherent functions category. Dimock et al. (1958) considers security of public order, national defense, diplomacy, and financial activities as inherent functions. Additional functions refer to the characteristic functions of a government based on the nation's ideologies, management philosophies, and administrative configurations. Dimock et al. (1958) places economic growth, social welfare, cultural growth, direct services, and so on in this category.

However, the function of government, once considered universal regardless of the era or type of nation, may change regarding specific duties over time. For instance, social welfare, categorized as an additional function by Dimock et al. (1958), can be considered an inherent function in the modern era. Social welfare is an inherent human right that must be guaranteed by the nation, and how aggressively that human right is interpreted decides the functional categorization of social welfare.

The function of government gradually changed and adjusted to match

the macroscopic changes such as globalization and informatization as well as the changes in expectation of public services and the level of consciousness. However, core inherent functions of government do not change easily, and these include production of public goods, police function, and facilitative functions (Salamon, 2002). Production of public goods refers to all direct production activities of goods and services and includes public education, provision of water works, social security, public health, etc. Police function includes actions by the government in the fields requiring legal and physical force such as police, national defense, prison management, criminal punishment, and tax collection.

2. Quality of life

Quality of life is a compound concept difficult to define in a single statement. Since quality of life is measured not only by objective criteria but also by subjective indexes (Costanza et al., 2007), it is an extremely complex concept comprising nearly 92 factors (Ventegodt et al., 2003). Quality of life is categorized into material and financial values and psychological and non-financial values, and neither can be excluded. The material and financial values exclude aspects of quality of life such as comfort and pleasure whereas the psychological and non-financial values include happiness and satisfaction (Go & Choi, 2012).

Although quality of life is a combination of both psychological and material, the psychological aspect is more emphasized than the material. Even when approaching the concept of quality of life from a psychological perspective, since it can be evaluated by either happiness or satisfaction, it is still a compound concept. These two factors also differ conceptually from one another. Happiness is a quality of life based on emotions (Shin & Johnson, 1978), whereas satisfaction is based on perception (Sharon, 1986). Although quality of life has a compound definition, simplified, the material and financial aspects are connected respectively to comfort and pleasure, whereas the non-material and non-financial aspect are connected individually to satisfaction and happiness (Shin & Johnson, 1978; Veenhoven, 2006).

Even the standards in quality of life vary. Veenhoven (2006) differentiates the standards into set-point theory, comparison theory, and affect theory. Set-point theory is a standard in which a certain person marks the level of happiness felt into points and it is a subjective judgement. Shin and Johnson (1978), who interpret quality of life as happiness, use this standard. Comparison theory is a rational method in which an optimum quality of life is set, and then, the current level of happiness is compared to it in term of numerical value. It attempts to objectify quality of life, which is subjective in nature. Last, affect theory states that quality of life is a subjective concept based on emotional experiences reflecting satisfaction of desires.

Diener and Suh (1997) approaches the concept of quality of life using social indicators, subjective well-being of individuals, and economic indicators. Quality of life, as viewed from a social indicator perspective, is a form of statistics that measures the quality of life in certain nations or areas, wherein the nations or local governments process and provide the various data (Hagerty et al., 2001). This social indicator can be used as a guideline for policies. Quality of life in subjective terms is a standard based on personal experiences measured through subjective evaluations of personal life surroundings and society. Last, quality of life as an economic indicator is evaluated based on an individual's level of ability to select and consume goods and services.

Bagdoniene (2000)'s universal quality of life model is categorized into general quality of life such as clean environment, human rights, political participation, etc., quality of external life such as work, quality of life in the family, housing, etc., and quality of human relations such as quality of human relations, in terms of body and mind, etc. (Susniene & Jurkauskas, 2009). Coggburn and Schneider (2003)'s research considers many different factors in measuring quality of life, including personal and social perspectives such as happiness, freedom, practicality, personal identity and general education, health, family relations, traffic, environment, political participation, economic situation, and crime. Quality of life is a holistic concept that includes various factors related to human life and is decided by objective life environments and subjective

life satisfaction (Hollar, 2003) and can be considered a comprehensive evaluation of utility in different fields of life (Andrews & Withey, 1976; Campbell et al., 1976).

Hence, quality of life is a concept that embraces psychological factors, social environment, and economic status, and it includes social and economic traits such as health, education, and income besides being closely related to subjective satisfaction (Frey & Stutzer, 2000). The psychological factors include personal life satisfaction and happiness and social factors have a subjective and emotional aspect that includes security of affiliated societies and environments. Last, objective aspects are measured through assessments such as income, education, and health.

The representative indexes that measure quality of life include the Human Development Index (HDI) from the United Nations Development Programme (UNDP), Better Life Index (BLI) from the Organization for Economic Cooperation and Development (OECD), the Quality-of-Life Index from the Economist Intelligent Unit (EIU), and so on. The HDI is an assessment conducted by the UNDP each year to evaluate the level of development of individual nations by looking at various factors such as education, income, average life expectancy, etc. The indicator shows that happiness or level of development does not scale with the level of income but rather how wisely that income is spent. The BLI from the OECD represents the level of life of people in different nations considering various factors such as housing, income, jobs, communities, education, environment, health, security, etc., and comprises 24 indexes in 11 different fields. The QLI from the EIU is measured using factors such as life expectancy, divorce rate, community life, GDP per capita, political stability and public security, unemployment rate, gender inequality, political and civil freedom, etc.

3. Relation between government characteristics and quality of life

Various studies discuss the relation between quality of life or happiness and quality of government (Helliwell & Huang, 2008; Ott, 2011; Samanni & Holmberg, 2010; Tavits, 2007). Furthermore, indexes

such as the World Competitive Index of international organizations or research organizations are used to compare governments of various countries and are important standards in research.

Helliwell and Huang (2008) discuss the close relation between life satisfaction and quality of government rather than economic factors such as disposable income, using data from the World Values Survey. Providing a trustworthy environment and efficient services to citizens are primary factors in the quality of government. Kaufman et al. (2003)'s research identifies six fields in the quality of government that influence subjective well-being in comparisons between nations. The study proves that it is the quality of government that affects the quality of life as differences in personal characteristics yielded identical results. Samanni and Holmberg (2010) identify that not only in developing countries but also in OECD nations, there is a strong correlation between the quality of government and happiness. Ott (2011), by measuring the quality of government based on the governance index, argues that rather than the democratic qualities of government such as participation, accountability, political stability, etc., technical qualities of government such as the quality of control, rule of law, and control of corruption have a bigger effect on happiness.

Bae (2014)'s study indicates that the quality of government affects satisfaction and happiness, and that quality of life is the goal and product of government operations. Analyses have been conducted on eight Asian nations' quality of government factors such as political stability, participation, government effectiveness, and rule of law. Do (2016) shows that democratic participation and government effectiveness can be systematically guaranteed by quality of government and is a crucial part of evaluating it. On the contrary, Tavits (2008) analyzed data from 68 nations and surveys from 16 European countries to declare that better quality of government is linked to higher points on the subjective well-being index.

Suh (2015) compared 51 countries and clarified that not only do economic growth, income distribution, and the quality of government have a significant impact on quality of life but also that quality of life

on an objective level and on a subjective level do not necessarily go together. Quality of government has a positive effect on both objective and subjective aspects of quality of life, but economic growth has a positive effect only on the subjective aspect while having a negative effect on the objective quality of life. Choi et al. (2018), focusing on the mediating effects of economic growth, prove that government effectiveness has a positive effect on economic growth, and that rule of law, citizen participation, and increase in accountability are negative factors, based on an analysis of 144 countries.

There can be a negative or a positive correlation between size of government and quality of life (Bjørnskov et al., 2007; Ott, 2005), or a decrease in quality of life when the size of government surpasses a specific level (Hessami, 2010; Scully, 2001). Either way, size of government has a major influence on quality of life.

Previous studies have analyzed the effects of size of government considering budget and spending on quality of life (Bjørnskov et al., 2007; Ott, 2005; Scully, 2001; Yamamura, 2011). Bjørnskov et al. (2007)'s research reveals a negative correlation between size of government and quality of life, or the higher the ratio of government spending to the GDP, the lower the quality of life. Such negative effects have also been seen in Ott (2005)'s research. Increasing government spending through transfers and subsidies results in a decrease in quality of life. Ott (2011) reinstates that the size of the government and happiness is influenced by the quality of the government. In other words, a big government that is good has a positive impact on the level of happiness; however, a big government that is bad will not. In addition, Scully (2001)'s study notifies that excess government spending over the appropriate level causes a wasted budget and incurs a decrease in quality of life. Yamamura (2011)'s case study of Japan shows that the size of government is a decisive factor in happiness. According to Hessami (2010)'s research on 12 EU countries, which considers both qualitative and quantitative aspects of government, shows a reversed U-shaped relation between the size of government and well-being. It explains that lower spending on social welfare increases quality of life.

Kim et al. (2018) is a recent research that analyzes the effects of quality and size of government on quality of life. It conceptualizes the quality of government into government effectiveness, rule of law, and corruption control, and the size of government into the level of purchasing power compared to the size of government spending. It then analyzes the effects of those variables on objective well-being (HDI; health, education, income, etc.) and subjective well-being (life satisfaction). On conducting a panel analysis on 187 nations from 2000 to 2014, it has been found that government effectiveness, size of government, and the state of ecosystem have a positive effect on the quality of life, and the government effectiveness, rule of law, population, and GDP per capita all have a positive effect on subjective well-being. However, a bigger government was found to have a negative effect on subjective well-being.

There have been multiple attempts to conceptualize the characteristics of government through its aspects such as quality, size, etc., and to analyze the effects on the quality of life. However, it is uncommon to find research that establishes government function as a subordinate concept to government characteristics and uncovers the relation between government function and quality of life. The function of government is defined by policies that are prioritized and executed, and this can be identified by looking at the ratio of spending on policies that are categorized into specific functions. In other words, the primary function of a government can be identified by considering the amount of resources being allocated into either the production of public goods, police functions, or facilitative function, as suggested by Salamon (2002).

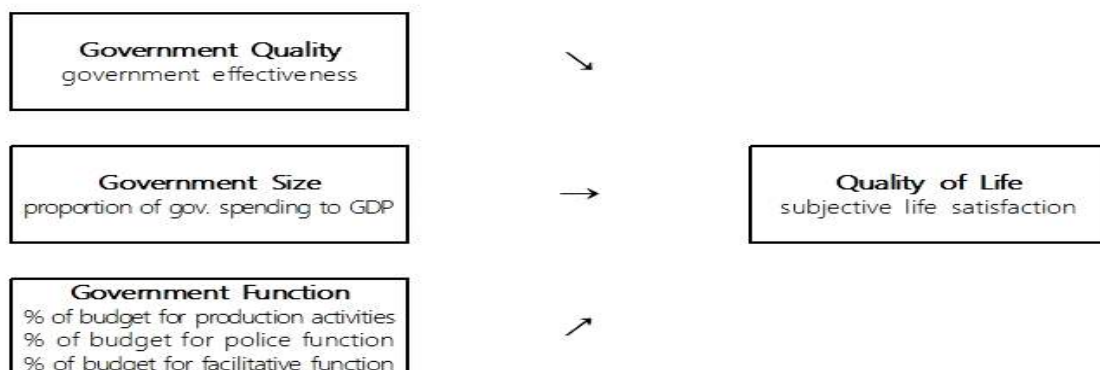
Such a definition of the function of government is similar to the definition of government size. In most studies that define the size of government, the index is comprised of budget and spending of government. The aggregate government spending is an index that can be used to figure out the size of government. Simultaneously, the characteristics of the spending can be categorized to identify the function of government. In other words, rather than the aggregate spending, the relative amount

between types of spending is the index that indicates the function of government. Therefore, this research seeks to define the characteristics of government using not only the quality and the size of government but also its function as a classification of government spending, and to analyze how such characteristics affect the quality of life.

III. Research design

1. Method

The study establishes the following research model (see figure 1) to analyze how government characteristics, that is, quality, size, and function, affect the quality of life considering the effect of each factor.



〈Figure 1〉 Research model

The quality of government is defined as the government effectiveness, size of government as the ratio of government spending to the GDP, and the function of government as the ratio of budget allocated to production of public goods, police functions, and facilitative functions. Previous studies have conceptualized quality of government with components such as government effectiveness, rule of law, and corruption control; however, in this study, government effectiveness is the sole index considered to observe the quality of government as affected by the government itself, rather than by the general administration. The

government effectiveness index of the World Bank that is used in this research is a result of evaluating qualification of public servants and government's executive power, and it is calculated by integrating various factors such as quality of public services, quality of public servants, level of freedom from political pressure, the level of creating and executing policies, and confidence in the government's will to realize policies. The size and function of government is calculated using OECD statistics. The size of government, as in previous studies, is defined by the level of government spending and is conceptualized as the ratio of government spending to the GDP. Government function is conceptualized as the ratio of budget allocated for public goods, police, and facilitative functions to the total budget. The index is calculated by finding the sum of budget allocated to each function according to the OECD's classification of government expenditure by function.

Quality of life is analyzed by the subjective life satisfaction index. Subjective life satisfaction uses nation-specific values measured in response to the question "Considering all aspects, how satisfied are you with your life?" as proposed by the World Database of Happiness (WDH). The reason for not including indicators such as income, education, and health, which can capture objective life satisfaction, as in some previous studies, is that the purpose of this research is to understand the effect of government characteristics on the overall quality of life. The function of government operationally conceptualized in this study is the proportion of the budget allocated to perform a specific function compared to the total government budget. In other words, the method in which the government allocates and executes its budget is considered the government function, and if the proportion of the budget allocated to a specific function is high, the objective social indicators influenced by the policy serve as an index of the effectiveness of the specific function, but they are not suitable for measuring overall life satisfaction.

The fuzzy-set analysis used in this study is a research methodology in mathematics and psychology but now expanding to the fields of social sciences based on the fuzzy-set theory proposed by Lofti Zadeh (1965)

and is an alternative method to overcome the limits in studies with small number of cases to understand the causal relationship of results (Choi, 2009; Ragin, 2000).

The differences between fuzzy-set analysis and traditional causal relationship analysis are as follows (Choi, 2009; Ragin, 2000; Rihoux & Ragin, 2008). First, unlike traditional causal relationship analysis, in which it is assumed that a single causal variable is responsible for a certain result, fuzzy-set analysis assumes that the causal variables are variously combined under different contextual circumstances and that differential outcomes can be derived in each case. In other words, in the traditional set (crisp-set), only extreme memberships scores of 1 (present) and 0 (absent) can be assigned. However, the fuzzy-set analysis emphasizes combining several causes that produce a particular result, since one unique explanatory variable cannot be the only factor that affects a particular outcome. Consequently, a fuzzy-set may assign multiple membership scores between 1 and 0 to account for the partial integration conditions between the cause conditions. Second, when using regression analysis, which is a traditional causal analysis, it is possible to analyze variables that are not included due to the problems of freedom and multi-collinearity caused by the limit in the number of subjects. In other words, the fuzzy-set analysis has the advantage of analyzing small number of cases and is frequently utilized when conducting social sciences research on a small number of countries (Lee, 2010). Third, the result based on the fuzzy-set analysis can be generalized, as it is basically a quantitative research, by verifying necessary and sufficient conditions for combined causal conditions (Kim, 2007).

This study uses fuzzy-set analysis to explain the pluralistic context through a combination of factors showing various government characteristics rather than a single independent variable as a factor affecting quality of life, by discussing how the combination of quality, size, and function of government positively affects quality of life.

2. Data and measurement

Various data, except data on quality of life, of 30 OECD countries for the period 2012 to 2017 are drawn from international organizations such as the World Bank, OECD, and WHD (see Table 1).

〈Table 1〉 Data

Factors		Indicators	Source
Government Characteristics	Quality (2012-2017)	Government effectiveness	The World Wide Governance Indicator, The World Bank
	Size (2012-2017)	Proportion of government spending to GDP	General government final consumption expenditure, OECD
	Function (2012-2016)	% of budget for production activities	% of budget for police function % of budget for facilitative function
% of budget for police function			
% of budget for facilitative function			
Quality of Life (2005~2014)		Subjective life satisfaction	World Database of Happiness (WDH)

The quality, size, and function of government constituting the government characteristics are measured by the indicators of government effectiveness, the proportion of government spending to GDP, and the proportion of budget for production activities, police function, and facilitative functions compared to the total expenditure, respectively. The government effectiveness indicator uses the World Bank's World-wide Governance Indicator¹⁾ collected from 2012 to 2017. The proportion of government spending to GDP is calculated based on the

1) The World Bank has published WGI for over 200 countries since 1996 to quantify the governance of a country. WGI was first published in 1996 and has been renewed every two years until 2002, but thereafter it is being updated annually. The World Bank uses 32 data sources from over 30 agencies around the world to produce these indicators. The quantification method consists of (1) the process of constituting, monitoring, and replacing the government; (2) the ability of the government to prepare and implement sound policies; and (3) the state of the system of economic and social interaction.

OECD's general government final consumption expenditure statistics from 2012 to 2017. The proportion of budget for production activities, police function, facilitative function compared to the government expenditure is calculated based on the OECD's Classification of the Functions of Government (COFOG) statistics from 2012 to 2016. The production function is the proportion of budget allocated to housing and community amenities, health, education, and social protection in comparison to total expenditure. The police function is the proportion of budget allocated to total expenditure to defense and public order and safety, and the facilitative function is the proportion of budget allocated to economic affairs in comparison to total expenditure.

The quality of life is operationally conceptualized by using the subjective life satisfaction index derived from the questionnaire on the overall life satisfaction conducted by the World Database of Happiness accumulated from 2005 to 2014.

The purpose of this study is to analyze the effect of government characteristics on quality of life by applying the fuzzy-set analysis method. The government effectiveness variable that encompasses the characteristics of government is measured on a scale from -2.5 to 2.5, and the proportion of government spending to GDP, and the proportion of budget for production activities, police function, and facilitative function to the total expenditure is measured from 0 to 100%. Finally, subjective life satisfaction variable that measures the quality of life is measured on a scale of 1 to 10 (see Table 2).

〈Table 2〉 Variables

	Factors		Variables	Measure	Abbreviation
Cause	Government Characteristics	Quality	Government effectiveness	-2.5~2.5 points	effect
		Size	% of government spending to GDP	0~100%	size
		Function	% of budget for production activities	0~100%	product
			% of budget for police function		police
			% of budget for facilitative function		facilitate
Effect	Quality of Life	Subjective life satisfaction	1~10 points	quality	

IV. Findings

1. Calibration of fuzzy score

To perform the fuzzy-set analysis, the fuzzy-set data should be calculated by transforming the original scores of cause and effect into fuzzy scores. For the fuzzy-set data transformation, the maximum value, the median value, and the minimum value were set as full membership point, cross-over point, and non-membership point, respectively.²⁾ The reason for setting the median value rather than the average value as the cross-over point is to eliminate errors due to extreme or abnormal values among variables. The results of fuzzy score conversion of variables corresponding to cause and effect for the analysis are as shown in Table 3.

²⁾ The conversion to fuzzy scores is done using the 'calibration' function on the FsQCA program.

〈Table 3〉 Fuzzy scores

Country	Cause					Effect quality
	effect	size	product	police	facilitate	
Australia	0.71	0.38	0.52	0.62	0.49	0.77
Austria	0.65	0.56	0.88	0.07	0.6	0.58
Belgium	0.51	0.9	0.5	0.17	0.63	0.58
Czech Republic	0.24	0.53	0.17	0.32	0.76	0.3
Denmark	0.92	0.95	0.29	0.73	0.92	0.95
Estonia	0.26	0.54	0.42	0.67	0.55	0.16
Finland	0.95	0.91	0.95	0.15	0.15	0.87
France	0.49	0.9	0.94	0.32	0.25	0.22
Germany	0.8	0.5	0.94	0.92	0.95	0.58
Greece	0.05	0.64	0.1	0.58	0.7	0.26
Hungary	0.08	0.58	0.11	0.24	0.8	0.05
Ireland	0.56	0.13	0.19	0.08	0.05	0.73
Israel	0.43	0.83	0.21	0.95	0.05	0.64
Italy	0.07	0.49	0.73	0.82	0.12	0.3
Japan	0.8	0.59	0.5	0.24	0.3	0.22
Korea	0.3	0.15	0.05	0.77	0.86	0.14
Latvia	0.22	0.35	0.28	0.57	0.76	0.05
Lithuania	0.23	0.28	0.75	0.57	0.25	0.08
Luxemburg	0.8	0.27	0.9	0.05	0.59	0.81
Netherlands	0.89	0.95	0.28	0.42	0.18	0.77
Norway	0.92	0.83	0.95	0.22	0.39	0.89
Poland	0.13	0.37	0.28	0.58	0.2	0.38
Portugal	0.34	0.4	0.66	0.33	0.23	0.08
Slovak Republic	0.17	0.46	0.6	0.54	0.55	0.19
Slovenia	0.27	0.46	0.41	0.2	0.72	0.48
Spain	0.31	0.5	0.51	0.43	0.51	0.48
Sweden	0.9	0.47	0.94	0.2	0.16	0.84
Switzerland	0.95	0.05	0.45	0.52	0.56	0.89
UK	0.69	0.51	0.82	0.66	0.08	0.53
US	0.61	0.1	0.38	0.87	0.19	0.64

2. Configuration conditions of quality of life

The truth table analysis is performed by converting the original scores of the variables corresponding to cause and effect into fuzzy scores. The truth table analysis examines the logical combination of all possible independent variables that explain the effect (dependent variable). The truth table represents the combination of all possible causes as a row of 2^k , where k is the number of variables included in causes, in which 1 and 0 are the polar extremes of the vector space defined by the fuzzy set causality (see Table 4).

A total of 32 (2^5) combinations were found in the result of the truth table analysis. Of these, 11 combinations are derived by eliminating the combinations with 0 cases and selecting only the combinations with the

numbers 1 and 2. In the truth table, 0 implies that the fuzzy score is less than 0.5, and 1 implies the fuzzy score is 0.5 or more. The consistency indicates that the combination of variables is a subset of the effect, which is a sufficient condition. In this study, the standard for consistency is set to 0.8³⁾, and only in cases in which the variable is above 0.8, a score of 1 is assigned.

<Table 4> Truth table analysis

effect	size	product	police	facilitate	number	quality	consistency
1	1	1	0	1	1	1	0.882838
1	0	1	0	1	1	1	0.876588
1	0	1	1	0	1	1	0.869328
1	1	0	1	1	1	1	0.867368
1	0	0	1	0	1	1	0.862069
1	0	1	0	0	1	1	0.855769
1	1	1	1	0	1	1	0.848987
1	1	1	0	0	2	1	0.837838
1	0	0	1	1	1	1	0.834043
1	0	0	0	0	1	1	0.831776
1	1	0	0	0	1	1	0.817343

By examining the solution of causes toward effects through the truth table analysis, it is confirmed that the three compositions of government characteristics positively affect quality of life (see Table 5).

<Table 5> Solution based in truth table analysis

Model		Output	Coverage	Consistency
Solution 1		f(effect, size, product, police, facilitate)	0.753804	0.854902
2		effect*~police*~facilitate + effect*~product*police*facilitate		
3		effect*~size*~facilitate + effect*~size*~product*police effect*product*~facilitate + effect*product*~police		

Note) * refers to the combination of variables and ~ refers to the negative effect.

First, when government effectiveness is high, the proportion of budget

3) In general, a score of consistency less than 0.75 is considered substantial inconsistency.

to police function and facilitative function is low, or the proportion of budget to production activities is low, but the proportion of budget to police function and facilitative function is high. In other words, the functions a government performs when the quality of civil servants and administration of government attains a certain level is what influences quality of life. Particularly, the proportion of the budget allocated to public production activities, police, and facilitative functions might be seen to have a conflicting effect. Since the total amount of budget is limited, when the proportion of budget to police function and facilitative function is high, it means that the proportion of budget allocated for public production activities is relatively low. In other words, as the effectiveness of the government is maintained at a certain level, when the government increases the proportion of the budget allocated to the police function and facilitative function rather than production activities, and thus invests relatively more in defense and order maintenance and economic growth, there is an increase in the possibility of advancement in quality of life.

Second, when government effectiveness is high and the size of government is small, the proportion of budget allocated to facilitative functions or to production activities is low. However, the possibility of higher quality of life increases. The low proportion of budget allocated to facilitative functions suggests that the economy is being circulated by market mechanisms and that there is an environment in which people can use the goods and services they need without intervention by the government. In addition, even if the government does not invest much of its budget in the production of public goods through various social policy implementations, the possibility of improving quality of life will increase if the society is stabilized by faithfully performing police functions such as defense and domestic order maintenance.

Third, if the proportion of budget allocated to facilitative function or police function is low while government effectiveness is high and the proportion of budget allocated to production activities is high, it tends to an increase in quality of life, indicating a case in which the economy is in a virtuous cycle without the need for a government intervention, or

as a case in which defense, security, and domestic order are well maintained without additional investment by the government. In other words, if a government is highly effective and the proportion of budget on public goods production is high through various social policies, it suggests that the economy is stable, or that the government is in a stable situation so that it does not have to invest additional budget in national defense and domestic order maintenance.

3. Summary

Analyzing the quality, size, and function of governments in 30 OECD countries based on fuzzy-set analysis revealed that quality of government is the major factor for improving quality of life, implying that when government effectiveness improves, that is, when the quality of public services, the quality of public servants, independence from political pressures, level of policy design and implementation is maintained over a certain level. On the other hand, increasing government size is found to have a negative impact on improving quality of life. More precisely, as government spending and government intervention increase, quality of life decreases.

Securing the quality and size of government improves quality of life more than actively producing public goods through various social policies wherein the economy is stabilized by market mechanisms to a point at which it would be fine to lower spending on facilitative function, or when security is stable enough both inside and outside of a country such that it would be fine to lower police functions. In addition, in welfare states where a high proportion of the budget is allocated to production activities, it is necessary not only to invest in social policies but also stabilize the economy so that government intervention is not necessary or the government does not have to input additional budget for defense and domestic order maintenance to reach the target level of welfare state. In other words, without economic and social stability, expansion of social policy cannot have a positive effect on improving quality of life as originally intended.

V. Conclusion

This study attempts to analyze the impact of government characteristics on quality of life and draw implications for the direction government should take in providing public services. Discussion and analysis of various concepts such as good government, good governance, and quality of government have also been integrated into the study. Previous studies have analyzed and operationally defined quality of government through various indicators such as government size, government effectiveness, rule of law, democracy, quality of bureaucracy, and corruption. However, measuring government quality in the government function as provider of public services provides a limited measurement. This study sheds light on the implications of how the function of government should change, by analyzing the effects of government characteristics on quality of life by classifying government characteristics as quality, size, and function.

Applying the fuzzy-set analysis method to identify the effects of government characteristics on quality of life, the study defined 'quality of government' as government effectiveness, the 'size of government' as the proportion of government spending to GDP, and the 'function of government' as the proportion of government budget to be used for production activities, police function, and facilitative function. The government effectiveness indicator is calculated based on the World Bank's World-wide Governance Indicators collected from 2012 to 2017, and the proportion of government spending to GDP is based on the OECD's General Government Final Consumption Expenditure statistics from 2012 to 2017. The proportion of budget allocated to production activities, police function, and facilitative function compared to government budgets was calculated based on the OECD's Classification of the Functions of Government (COFOG) statistics from 2012 to 2016. The quality of life was based on subjective life satisfaction index derived from the questionnaire which asked about the overall life satisfaction in the World Database of Happiness accumulated from 2005 to 2014.

According to the analysis, the quality of government is essential in improving the quality of life. In particular, the quality of life can be enhanced when government effectiveness, defined as the quality of public services, the quality of public servants, the independence from political pressures, and the level of policy design and implementation is maintained over a certain level. In addition, as in previous studies, the increase of government size, government spending and government intervention, has a negative impact on improving the quality of life.

In situations where a certain level of quality and size of government is guaranteed, rather than the government actively producing public goods through various policies, but when the economy is stabilized by the market mechanism or in cases in which security is stable both internally and externally, the likelihood of quality of life tends to increase. In addition, not only investing in social policies, but also maintaining a stable enough economy or a stable security, the state can reach the target level of welfare state. In other words, without economic and social stability, the expansion of social policy cannot have positive impact on improving the quality of life as originally intended. This implies that maintaining social stability through strengthening security and creating economic stability based on the market mechanism is the basis, and that expanding social policies on top of that foundation is the effective and efficient way to enhance the quality of life.

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