Comparing the Arrangements of Governance and Sustainable Development in OECD Countries: Coupled or Decoupled?

Taewook Huh*

Abstract: This study attempts to analyze to what extent governance and sustainable development (SD) empirically appear compatible in the thirty-five OECD countries through the fuzzy-set ideal type analysis, and identify which ideal types appear coupled or decoupled, and then reveal which countries belong to the coupled types or to the decoupled types. In short, twenty-two countries (including Sweden (fuzzy score, 0.953), Denmark (0.920), Finland (0.914), Norway (0.911) in Type 1 (G*S, 'strong G-S coupled countries'); and Turkey (0.906), Greece (0.833), Mexico (0.828) in Type 4 (g*s, 'lite g-s coupled countries') are in line with the accepted conventions regarding the compatible relationship between governance and SD. On the other hand, the rest of thirteen countries (including USA (fuzzy score, 0.815), Luxembourg (0.721), Australia (0.660) in Type 2 (G*s, 'G-s decoupled countries'); and Slovenia (0.728), France (0.644), Czech Rep. (0.625) in Type 3 (g*S, 'g-S decoupled countries') may indicate that the relationship of governance and SD is in fact experiencing tensions in the national contexts. These findings are characterized by the substance (of SD) and procedure (of governance) divide. Considering the results, this study focuses on the idea of reflexivity or reflexive capacity.

Keywords: governance, sustainable development, fuzzy set ideal type analysis, OECD countries

INTRODUCTION

Sustainable Development (SD) and Governance are two of the well-known and often cited concepts, and both have been examined extensively since the 1980s. In the context of sustainable development (SD), while requests for a more sustainable

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form of political and institutional arrangement are growing, the idea of governance has been a trademark of dealing with SD. Governance as 'a new configuration' between the state, market, and civil society is indispensable for managing SD issues beyond the grounds of traditional forms of government based on hierarchical power (Sharma, 2007; Barns et al. 2008; Zeijl-Rozema et al., 2008). The conception of SD (or sustainability) indicates that it needs social consensus because it is not clearly measured as a scientific or economic phenomenon and it requires fundamental ethical consideration. In this regard, governance is essential as well in relation to the multi-dimensional concept of SD (Zeijl-Rozema et al., 2008; Glasbergen, 2010). Sustainable development that calls for new ways of handling problems requires participation, cooperation, and partnership between public, private and voluntary sectors – all principles of governance.

In short, governance practices and arrangements are pivotal for realizing (and institutionalizing) SD. The basic constitution and operating logic of the governance system can provide an institutional basis in which various stakeholders with equivalent rights and sufficient information can participate and build a consensus on the objective values of SD through discussions and learning processes (Jung, 2002; Stojanović et al., 2016). Hence, governance is highly likely to work as the framework on which social consensus on SD can be drawn. There is a general, global agreement amongst commentators that governance is consistent with SD, and there are also numerous examples, programs and projects in relation to governance for SD. These have been implemented and supported by various entities, such as civil society organizations, governments, and international communities across the world.

Nevertheless, even though governance – characterized by consensus-building, interaction, cooperation, and the participation of various stakeholders – deserves attention as an alternative management system, this participatory and communicative process may not actually guarantee the substance or content of SD (or sustainability), thus creating a 'substance-procedure divide' (Dryzek, 2000; Waas et al., 2014). It seems that there is a tension (or contradiction) between dominant democratic norms, which are found in governance principles such as participation, cooperation and collaboration, and the essential demands (objectives) of SD that are characterized by the content, the process and the context of SD: the content – recognized as 'wicked' problems which require an institutional change; the process – the involvement of a number of actors in tackling social complexities; and the context – strengthening weak institutionalization of sustainability issues (Zeijl-Rozema et al., 2008). In other words, decision-making through democratic processes of governance does not always result in rational outcomes of SD; namely, democratic forms and procedures often restrict the demands of SD (Lafferty, 2004; Tosun and

Leininger, 2017).

This paper attempts to analyze to what extent governance and SD empirically appear compatible in the 35 OECD countries using a qualitative comparative analysis (fuzzy set ideal type analysis), thus combining qualitative and quantitative methods. STATA 12.0 software was used for the analysis. In particular, the study tries to identify what ideal types appear coupled or decoupled and also which countries belong to which type. This paper is structured as follows: in section 2, I outline the theoretical background and issues: the link between SD and governance and the latent contradictions. In section 3, I explain the rationale of a fuzzy set analysis and describe the variable composition of the ideal type analysis. In section 4, I present the research findings of the analysis, and in section 5, I offer conclusions and implications.

THEORETICAL BACKGROUND AND ISSUES

The Link between Sustainable Development and Governance

Although the idea of SD has been globally embraced and used by a number of institutions since the Brundtland Report in 1987, there have been many disputes about the meaning of the concept. As Annemarie Zeijl-Rozema and her coauthors (2008) have explained, SD basically links environment and development, intertwining the natural science principle of sustainability——understood as the capacity for continuance——with the social science concept of development, which refers to a path for human progress. The term "development" is often seen as a synonym for economic growth, and therefore SD can be regarded as attempting to ameliorate the problems caused by economic growth but not as challenging economic growth (Sharma, 2007; Zeijl-Rozema, et al. 2008). SD thus has a contradictory nature. However, this study agrees that SD should be understood as a political or normative act and also should be seen as a "discussion about what kind of world we collectively want to live in, now and in the future" (Robinson, 2004, p. 382; Bell & Morse, 2011).

SD is generally acknowledged as being characteristic of a direction more than a place, especially in regard to innovation and opportunity (Dodson & Smith, 2003; UNDESA, UNDP, & UNESCO, 2012). It is multidimensional and includes social, political, and administrative processes. The social process is concerned with the distributional aspects of benefits and adverse impacts of development and the political and administrative processes pay attention to negotiating the rights and inter-

ests of the stakeholders affected by development (Dodson 2002). The pursuit of sustainability is regarded as a long-term, open-ended process (Farrell, Kemp, Hinterberger, Rammel, & Ziegler, 2005; Waas et al., 2014).

Governance has been defined in many ways and explored in different contexts. R. A. W. Rhodes (2007) points out a shift from government by a unitary state to governance through networks and the changing boundary between state and civil society, which has been broadly addressed. In this study, I focus in particular on the concept of governance as an emergent response to problems and limitations associated with existing government-centric hierarchical systems and regulations. As Raimund Bleischwitz (2004) and Bob Jessop (2000) have argued, governance was a new answer to state (or government) failures that made state intervention the solution for market failure—this highlights the contradictory assumption of the procedural rationality of perfect markets (and Pareto-optimal allocation of values) and of equal exchange of trade and free competition (Sørensen & Torfing, 2005; Klijn & Koppenjan, 2014). State or government failures refer to instances of state intervention where there was ineffective policy making and implementation due to a failure of substantive rational procedures (Jessop, 2000). In this context, the rationality of governance can be regarded more as reflexive, based on a radicalized modern version of the principles of deliberative democracy, rather than procedural or substantive (Benn & Dunphy, 2005; Voß, Bauknecht, & Kemp, 2006; Voß & Bornemann, 2011).

In the context of SD, the concept of governance has been characteristically addressed in dealing with SD, as demands for a more sustainable form of political and institutional arrangement are increasing. From the governance point of view, SD has two core components: substantive and procedural. The former highlights the need for an integrative approach to economic growth, social equity, environmental protection, and additionally democratization, and the latter focuses on broader participation in decision-making, capacity building, public access to information (Hass et al., 2004; Barnes et al., 2008; Waas et al., 2014). Therefore, governance is regarded as a foundation for SD.

Sustainable Development is a complex concern involving multi-level problems, multi-actors and multi-sectors, and it thus requires different ways of steering SD or sustainability from that of steering other goals (Zeijl-Rozema et al., 2008; UNDESA et al., 2012). This implies that sustainability needs social consensus because it is not clearly measured as being a scientific or economic phenomenon and, furthermore, requires fundamental ethical consideration. In other words, social consensus (not simply between experts but also among citizens) needs to be built-in, taking into account what should be made sustainable and how to make it so. Therefore, the pro-

cess of building a consensus on common, objective values is the way towards sustainability. In this sense, as Bell and Morse (2005; 2011) have explained, the objective of sustainability does not 'arrive at a particular point' but is open-ended, and is influenced by different ideas expressed by people in various sectors. The process of realizing SD should include broad stakeholder participation, and the success of it should be collectively considered and retrospectively determined.

As a result, governance has salience for the multi-dimensional concept of SD. In fact, governance can be employed by various disciplinary perspectives in relation to SD, for example, building theories; describing what has been done to put SD into practice; and what possibly should be done about SD in the future (Barnes et al., 2008; Jordan, 2008). Sustainable development that calls for new forms of problem handling, definitely requires certain principles of governance such as emphasizing participation and cooperation (Voß et al., 2006; Zeijl-Rozema et al., 2008; Weale, 2009).

The Latent Contradiction and Tension

Governance is not only a set of activities but also a tool through which a problem can be dealt with in view of the big picture of modifying systems of rules and encouraging consensual solutions (Hyden, 2001; Hezri & Dovers, 2006). Moreover, the strategic aspects of change can serve as catalytic interventions or steering mechanisms for SD (Hyden, 2001).

However, it can be argued that the relevant relationship between governance and SD might be regarded as more apparent than real (Jordan, 2008). In particular, there are latent contradictions between the practices of governance and the aims of SD. As William Lafferty (2004) and Jale Tosun and Julia Leininger (2017) have argued, there is much more tension between dominant democratic norms and the essential demands of SD than is normally assumed. Governance principles are tightly associated with democratic norms and procedures. For example, according to Eva Sørensen and Jacob Torfing's argument (2005, p. 211), governance increases the quality of policy output and thus increases the outcome legitimacy of liberal democracies (Scharpf, 2000), encourages the development of democratic empowerment, reasoned deliberation, and new forms of narrative accountability (March & Olsen, 1995; Hezri & Dovers, 2006), and enables citizens to launch critique, opposition, and dissent (Dean, 1999; Barnes et al., 2008).

In fact, governance originates in the context of a shift from an aggregative democracy (which uses democratic processes to solicit citizens' preferences and then aggregates them) and representative democracy (which emphasizes equal

access to the political channels of influence) to a more participatory and deliberative democracy (Lee, 2002; Sørensen & Torfing, 2005; Barnes et al., 2008). Governance can play a role in the recovery of the political process by unleashing a new process that enhances coordination, agreement, and cooperation between rational actors (Rawls, 1993, cited in Sørensen & Torfing, 2005). In other words, although there is a risk that governance models like the New Public Management cater more to objectives of efficiency and performance than to ensuring transparency and accountability (Pierre, 2009), governance has the potential to establish horizontal networks and voluntary communication in a new system in which the state, economy, and society co-exist.

According to Lafferty (2004) and Lafferty and James Meadowcroft (2000), democratic principles, including transparency and accountability, not only do not always support SD but in fact often restrict it. This is because SD challenges the economy-first principle, and therefore does not find itself in harmony with democratic forms and norms, which are dependent on the wishes of citizens. This means that if the majority of citizens or participants in the governance system do not support SD, there is no room to pursue its goals. That is, one of the dilemmas of participation is that participants are bound by the rule of law (Doherty & de Geus, 1996; Barnes et al., 2008; Pierre, 2009). In short, it can be argued that democratic norms and procedures do not always ensure that the aims of SD will be achieved, resulting in what is referred to as the "substance and procedure divide" (Goodin, 1992; Dryzek, 2000; Waas et al., 2014).

FUZZY SET METHODOLOGY AND MEASUREMENT FRAMEWORK

The Rationale of Fuzzy Set Ideal Type Analysis

Fuzzy set analysis is a special form of qualitative comparative analysis (Ragin, 2000; 2008) developed by Lofti Zadeh in 1965, and it has been used in diverse ways by scholars such as Charles Ragin and Jon Kvist in the social sciences (Choi, 2009; Schneider & Rohlfing, 2016). Fuzzy set analysis goes beyond the traditional two membership scores of 1 or 0 that characterizes crisp sets and makes use of various membership scores between 0 and 1 that can document not only partial memberships but also the difference of the degree.

The advantages of fuzzy set analysis is that the limitations of case-oriented study and variable-oriented study can be overcome. Case-oriented analysis deals

with a particular phenomenon in depth, while quantity-oriented analysis uses variables to infer generalities in various cases(Ragin, 2000). Fuzzy set analysis categorizes cases by combining a variable-oriented quantitative methodology and a qualitative case study approach, and what distinguishes it from other tools is that it enables examination of social diversity through comparative study (Choi, 2009; Ragin, 2000).

Second, it is possible using fuzzy set analysis to handle case studies with a small to medium number of cases (15-50) that comparative case analysis and regression analysis cannot address (Ragin, 2000; Choi, 2009). Moreover, it is also used in analyzing joint causal relations, as it allows researchers to give due consideration to interactive effects between each quality in a given case (Choi, 2009; Schneider & Rohlfing, 2016).

Third, it can explain diverse social phenomena. Although the subjects of social science research are complicated, in practical analysis it seems researchers often simply break the phenomena they study down into the dichotomy of 0 and 1 (public and private sectors, national and international politics, high and low civil society capacity, etc.) (Ragin, 2000; Rihoux, 2006). Fuzzy set analysis by contrast represents various degrees between 0 and 1, thereby minimizing the loss of information in analysis (Rihoux, 2006; Choi, 2009).

Fourth, it enables a more theoretical approach to the categorization of types. Many researchers have been using quantitative statistic methods such as cluster analysis to categorize types (Gough, 2001; Bambra, 2007). Use of types is often criticized on the grounds that they are based on the arbitrary interpretation of the researchers; fuzzy set analysis instead determines the number of types using categorization standards that consist of the ideal type extracted under a theoretical background (Katz et al., 2006; Choi, 2009). Accordingly, many recent studies have relied on fuzzy set analysis to categorize types (Yang and Jung, 2012; Seok, 2014). These properties make fuzzy set theory a useful tool in the analysis of civil society organizations that have general and indistinctive activity range and the characteristics of an organizational interior (Katz et al., 2006).

Fuzzy set analysis methodology can be further broken down into fuzzy set multiple conjunctural analysis and the fuzzy set ideal type analysis (Kvist, 1999; 2007; Choi, 2009; Yang & Jung, 2012). The former defines the relationship between cause and effect as a necessary condition or a sufficient condition. It has the advantage of enabling researchers to overcome the problem of distinguishing correlation and causation. Fuzzy set multiple conjunctural analysis can also be a powerful tool when it comes to analyzing the causal complexities in intermediate-level case studies (Rihoux, 2006; Ragin, 2008). On the other hand, fuzzy set ideal type analysis

applies fuzzy set theory to demonstrate how close the subject of analysis is to that which is converted into fuzzy sets (Kvist 1999; 2007). Through this process it analyzes the degree of memberships of each category, translating the existing original data results into fuzzy-set membership scores. As the number of the sets is decided by the ideal type, differentiating fuzzy set analysis from cluster analysis, fuzzy set ideal type analysis makes more systematic categorization possible(Yang and Jung, 2012; Seok, 2014; Li et al, 2015).

In this study, I use fuzzy-set ideal type analysis to categorize thirty-five OECD countries. The criteria for interpretation of membership scores for my analysis are based on those suggested by Ragin (2008). In particular, after I converted the scores into a fuzzy set score system using the calibrate function of STATA 12.0, I measured them according to three qualitative anchors: fully in, fully out, and a crossover point (the degree of in and out). In other words, any score that is higher than the crossover point (0.5) is given a strong membership score (in the case of the degree of fully in, the given value is higher than 95% [0.95]), and any score below that point is given a low membership score (in the case of the degree of fully out, the value is lower than 5% [0.05]). The formula for calculating degree of membership score in a fuzzy set idea type analysis is as follows:

- *Degree of Membership = exp(log odds) / (1+exp(log odds)*

Measurement Frameworks

In order to conduct the fuzzy set ideal type analysis, I first set up the two type variables (governance and SD). Second, I converted (calibrated) the two type variables into fuzzy scores by utilizing the three anchors (minimum, median [p50], and maximum of the origin values). For the variable framework, SGI (Sustainable Governance Index) and SDGI (Sustainable Development Goal Index) were selected and constituted the variable framework of this study, in order to identify the types of link between Governance and SD in thirty-five OECD countries in Y2017.

Table 1. The Variable Framework of the Ideal Type Analysis

Type	Variables	Reference	Type	Variables	Reference
G	governance	SGI (sustainable governance index)	S	SD	SDGI (sustainable development goals index)

The SGI is a cross-national survey of governance that identifies reform needs in 41 EU and OECD countries (Bertelsmann Stiftung 2017a). Its three main criteria are policy performance, democracy, and governance. This study focuses on the last criterion, which includes two subprinciples: executive capacity (including strategic capacity, interministerial coordination, evidence-based instruments, societal consultation, policy communication, implementation, and adaptability) and executive accountability (including citizens' participatory competence, legislative actors' resources, media, and parties and interest associations) (Bertelsmann Stiftung 2017a; 2017b). These two subprinciples pertain to the features of governance: interaction and cooperation between various stakeholders based on a horizontal, collaborative, and participatory relationship.

The SDGI describes countries' progress in achieving the 17 sustainable development goals (SDGs) and 169 targets adopted in 2015 at a special UN summit whose goal was to develop a plan for eradicating poverty and achieving sustainable development by 2030 worldwide (Bertelsmann Stiftung and SDSN, 2017). Its score is based on the SDG indicators of 17 SDG Agendas and particularly illustrates a country's position between the worst (0) and best (100) outcomes wide (Sachs, Schmidt-Traub, Kroll, Durand-Delacre, & Teksoz, 2017).

In this study, I calculated and interpreted the degree of membership of the fuzzy-set ideal type analysis using the principle of negation, the minimum principle, and the maximum principle (Ragin, 2000; Rihoux, 2006). I used the principle of negation to establish g and s as negative categories of the two category variables G and S through a fuzzy set membership score of 1 in each of the applicable categories. Accordingly, the ideal type was determined by applying number of cases that each category variable can take. I postulate four ideal type sets (high or low) based on the four category variables.

Table 2. The Four Ideal Type Sets

Ideal Type	Features of Types
1: G*S	High governance and High SD
2: G*s	High Governance and low sd
3: g*S	low governance and High SD
4: g*s	low governance and low sd

I interpreted these four ideal type sets using the minimum principle and the maximum principle (Kvist, 1999; Yang & Jung, 2012). The minimum principle states that the minimum value among the fuzzy set scores drawn from the four types of ideal type categorization will constitute the fuzzy set membership score of the respective categories; in other words, among the fuzzy scores of the two variables (G, S) that constitute category sets, the minimum value was selected. For example, if the fuzzy score of G in category G*S appears to be the minimum value, the fuzzy set membership score of category G*S is denoted as the fuzzy score of G itself. The maximum principle postulates that while four types of categories can conclusively present the fuzzy set membership score of 35 OECD countries, the one with the maximum value of the membership score will be the category for the corresponding area.

RESEARCH FINDINGS OF FUZZY SET IDEAL TYPE ANALYSIS

Through the fuzzy-set ideal type analysis, the four ideal types of Governance and SD of thirty-five OECD countries were derived. Table 3 below shows the results of the fuzzy membership scores (fuzzy score) of the countries for the Governance (G) and SD (S) variables set in this study. First, in terms of the Governance (G) fuzzy score, the Scandinavia countries (Sweden (0.953), Denmark (0.950), Finland (0.946), Norway (0.947)), New Zealand (0.855), Luxembourg (0.828), and Canada (0.805) were very high. On the other hand, Hungary (fuzzy score, 0.047), Greece (0.071), Slovak Rep. (0.093) and Turkey (0.094) remained very low. In relation to SD (S), there were very high fuzzy scores such as the Scandinavian countries (Sweden (0.953), Denmark (0.920), Finland (0.914), Norway (0.911)), Czech Republic (0.823), Germany (0.812) and Austria (0.793). However, Turkey (0.047), Mexico (0.057), Israel (0.076), Chile (0.117), USA (0.146), and Greece (0.167) had very low fuzzy scores.

Table 3. Fuzzy Set Ideal Type Analysis Results of 35 OECD Countries

Type / Country	Governance Fuzzy Score	SD Fuzzy Score	T1	T2	T3	T4	Ideal Type
			G*S	G*s	g*S	g*s	
Sweden	0.953	0.953	**0.953**	0.047	0.047	0.047	**Type 1: G*S**
Denmark	0.950	0.920	**0.920**	0.080	0.050	0.050	
Finland	0.946	0.914	**0.914**	0.086	0.054	0.054	
Norway	0.947	0.911	**0.911**	0.089	0.053	0.053	
Germany	0.739	0.812	**0.739**	0.188	0.261	0.188	
Switzerland	0.696	0.780	**0.696**	0.220	0.304	0.220	
Iceland	0.674	0.626	**0.626**	0.374	0.326	0.326	
Austria	0.613	0.793	**0.613**	0.207	0.387	0.207	
UK	0.778	0.530	**0.530**	0.470	0.222	0.222	
Belgium	0.519	0.688	**0.519**	0.312	0.481	0.312	
Canada	0.805	0.502	**0.502**	0.498	0.195	0.195	
United States	0.815	0.146	0.146	**0.815**	0.146	0.185	**Type 2: G*s**
Luxembourg	0.828	0.279	0.279	**0.721**	0.172	0.172	
Australia	0.741	0.340	0.340	**0.660**	0.259	0.259	
New Zealand	0.855	0.468	0.468	**0.532**	0.145	0.145	
Israel	0.514	0.076	0.076	**0.514**	0.076	0.486	
Ireland	0.630	0.492	0.492	**0.508**	0.370	0.370	
Spain	0.502	0.406	0.406	**0.502**	0.406	0.498	
Slovenia	0.110	0.728	0.110	0.110	**0.728**	0.272	**Type 3: g*S**
France	0.356	0.713	0.356	0.287	**0.644**	0.287	
Czech Republic	0.375	0.823	0.375	0.177	**0.625**	0.177	
Japan	0.421	0.704	0.421	0.296	**0.579**	0.296	
Netherlands	0.483	0.679	0.483	0.321	**0.517**	0.321	
Estonia	0.496	0.559	0.496	0.441	**0.504**	0.441	
Turkey	0.094	0.047	0.047	0.094	0.047	**0.906**	**Type 4: g*s**
Greece	0.071	0.167	0.071	0.071	0.167	**0.833**	
Mexico	0.172	0.057	0.057	0.172	0.057	**0.828**	
Chile	0.258	0.117	0.117	0.258	0.117	**0.742**	
Portugal	0.211	0.319	0.211	0.211	0.319	**0.681**	
Poland	0.227	0.333	0.227	0.227	0.333	**0.667**	
South Korea	0.344	0.312	0.312	0.344	0.312	**0.656**	
Slovak Republic	0.093	0.414	0.093	0.093	0.414	**0.586**	
Latvia	0.447	0.292	0.292	0.447	0.292	**0.553**	
Italy	0.482	0.312	0.312	0.482	0.312	**0.518**	
Hungary	0.047	0.498	0.047	0.047	0.498	**0.502**	

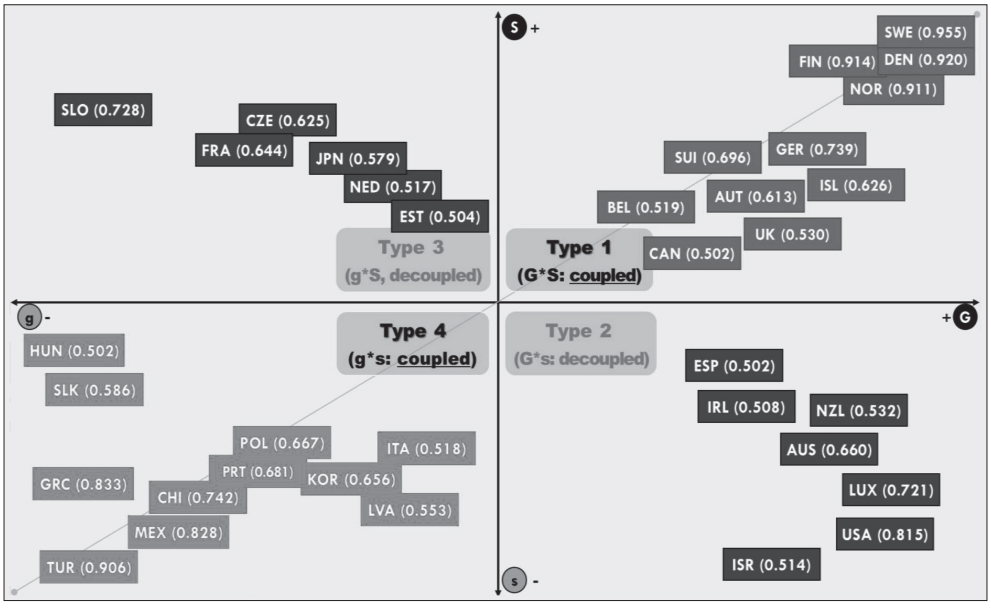
In particular, the eleven countries were included in Type 1 (G*S, 'strong G-S coupled countries') with both high features of Governance and SD: Sweden (fuzzy score 0.953), Denmark (0.920), Finland (0.914), Norway (0.911), Germany (0.739), Switzerland (0.696), Iceland (0.626), Austria (0.613), United Kingdom (0.530), Belgium (0.519), Canada (0.502). Also, the eleven countries belonged to Type 4 (g*s, 'lite g-s coupled countries') with features of both low governance (g) and low sustainable development (s): Turkey (fuzzy score 0.906), Greece (0.833), Mexico (0.828), Chile (0.742), Portugal (0.681), Poland (0.667), Korea (0.656), Slovak Rep. (0.586), Latvia (0.553), Italy (0.518), and Hungary (0.502). In short, the variables of G (governance) and S (SD) in 22 OECD countries (belonged to Type 1 and Type 4) appear to be compatible to each other: i.e. the finding arrangements of '(+) * (+)' and '(-) * (-)'. The twenty-two countries out of thirty-five OECD countries are seen as 'coupled types' of governance and SD.

On the other hand, there were seven countries in Type 2 (G*s, 'G-s decoupled countries') with the high feature of Governance (G) and the low feature of sustainable development (s): United States (fuzzy score, 0.815), Luxembourg (0.721), Australia (0.660), New Zealand (0.532), Israel (0.514), Ireland (0.508), and Spain (0.502). Also, there were six countries in Type 3 (g*S, 'g-S decoupled countries') with the low feature of governance (g) and the high feature of SD (S): Slovenia (fuzzy score, 0.728), France (0.644), Czech Rep. (0.625), Japan (0.579), Netherlands (0.517), and Estonia (0.504). In sum, thirteen countries (of Type 2 and 3) appear to belong to 'decoupled types' in which the variables of 'G' and 'S' are not compatible to each other: i.e. the finding arrangements of '(+) * (-)' and '(-) * (+)'.

As illustrated in Figure 1 below, twenty-two countries out of all thirty-five OECD countries were located in the first and third quadrants of the graph, in which governance and SD are in direct proportion. Among them, Sweden, Denmark, Finland and Norway in the first quadrant belonged to the very high country group with the high fuzzy score of Type 1 (G*S) and the high individual fuzzy scores of 'G' and 'S'. On the contrary, Turkey, Greece, Mexico and Chile in the third quadrant belonged to the country group (in Type 4) in which the individual fuzzy scores of 'g' and 's' were very low. Meanwhile, the rest of thirteen countries out of thirty-five OECD ones were located in the second and fourth quadrants of the graph that do not imply a direct relationship between the governance and SD. In particular, in the fourth quadrant, the cases of seven countries belonging to Type 2 (G*s, 'G-s decoupled countries') can be seen as containing the contradictory relations between governance and SD. In other words, there are tensions in which the democratic and communicative process of governance does not produce high-level results of SD. This finding shows the feature of 'substance-procedure divide' at the

national level. In fact, the case of United States may indicate this aspect most clearly. The fuzzy score of the United States of 0.815 is was the highest in all countries of Type 2; especially the Governance (G) fuzzy score was 0.815, while the SD (S) fuzzy score was 0.146, which shows the largest gap between the two, among the Type 2 case countries.

Figure 1. The Location of Link Types of 35 OECD countries



On the other hand, the cases belonging to Type 3 (g*S, 'g-S decoupled countries') had procedural limitations of 'weak' governance, while the substance (result) of SD was located at a high level (feature). This shows a contradictory situation. This can be seen as a different-kind aspect in relation to the 'substance-procedure divide'. In other words, it describes the incompatible aspect in the direction different from the decoupled relation of Governance and SD shown in Type 2 (G*s, 'G-s decoupled countries'). Slovenia seems to be the clear case of these characteristics. The fuzzy score of Slovenia was 0.728, the highest in all countries of Type 3; particularly the fuzzy score of Governance (G) was 0.110 while the fuzzy score of SD (S) was 0.728, which indicates the largest gap between the two, among the Type 3 case countries.

CONCLUSIONS AND IMPLICATIONS

This study analyzes first to what extent governance and sustainable development (SD) empirically appear compatible in the OECD countries through the fuzzy-set ideal type analysis, and second identifies what ideal types appear coupled or decoupled and also reveals which countries belong to the coupled types or to the decoupled types. In short, twenty-two countries (particularly including Sweden, Denmark, Finland, Norway, Turkey, Greece, and Mexico) out of all thirty-five OECD countries (around 63%) are in line with the accepted conventions regarding the compatible relationship between governance and SD; the results of Type 1 (G(+)*S(+)) and Type 4 (g(-)*s(-)), eleven countries belonged respectively. On the other hand, the rest of the thirteen OECD countries (around 37%) especially including United States, Israel, Luxemburg, Slovenia, Czech Rep., and France may indicate that the relationship of governance and SD is in fact experiencing contradictions and tensions in the national contexts; the results of Type 2 (G(+)*s(-)) and Type 3 (g(-)*S(+)), seven and six countries belonged respectively.

The G (+) arrangement implies the presence of cogovernance and g (-) that of hierarchical governance; according to the governance continuum framework of Oliver Treib, Holger Bähr, and Gerda Falkner (2005) and Zeijl-Rozema and colleagues (2008), such arrangements are reflect the existence of a link between public and private interaction or between public authority and social autonomy. Cogovernance is distinguished by coordination, cooperation, and collaboration between actors and by the lack of a central figure in charge (Kooiman, 2000; 2003). Hierarchical governance is the most formalized mode of governing and is often centered on a political or juridical framework of sanctions or interventions imposed on actors (Kooiman, 2000; 2003; Klijn and Koppenjan, 2014). In addition, S (+) indicates that the country has a strong carrying capacity for SD and has satisfied the 17 SDGs, achieving a balance between ecological, economic and social development; s (-) countries are characterized by weak sustainability—these countries can achieve the SDGs by exploiting existing resources and reducing pollution (Robinson, 2004; Zeijl-Rozema et al., 2008).

In sum the Type 1 category (G*S, strong G-S coupled countries) is demonstrates a compatible arrangement of co-governance and strong sustainability, while the type 4 category (g*s, ‘light g-s coupled countries’) shows a compatible relationship of hierarchical governance and weak sustainability in which the procedures of governance and the substance of SD are in direct proportion. On the other hand, the type 2 category (G*s, G-s decoupled countries) show an incompatible arrangement of co-governance and weak sustainability, and the type 3 category (g*S, g-S decou-

pled countries) manifests an incompatible arrangement of hierarchical governance and strong sustainability. This finding supports the argument that the presence of democratic norms and procedures in a country does not necessarily mean that the aims of SD will be met; in addition, a government-centered political framework of sanctions or interventions may be more effective for achieving SD (particularly SDGs), depending on the national context.

This study thus identifies latent tensions between governance and SD that can lead to a substance-procedure divide. It is in this context that the idea of reflexivity or reflexive capacity becomes important. In short, we are required to shift our focus from rationalist problem solving to second-order problems that work to interfere with problem solving (Benn & Dunphy, 2005; Voß et al., 2006; Voß & Bornemann, 2011).

In fact, the problem-solving approach is fundamentally limited when it comes to particular instrumental purposes (Voß et al., 2006). This limitation derives from a market-oriented mechanism, characterized into the feature g (-) that also may coexist (or be mixed) with the hierarchical-governance, that is generally operative in OECD countries. The incompatibility between the practices of governance and the substance of SD is a second-order problem that is an unintended consequence of market liberalism, and addressing it requires us to abandon instrumental specialization and ultimately transgress cognitive and institutional boundaries (Huh, 2010).

Reflexivity assumes two forms: first order and second order (Voß & Bornemann, 2011; Boström, Lidskog, & Uggla, 2017). First-order reflexivity refers to the process of dealing with the side effects of modernity, particularly the mechanism related to instrumental rationality—for example, by focusing on the legitimacy and the effectiveness of democracy (Voß & Bornemann, 2011; Boström, et al, 2017). Second-order reflexivity takes a critical stand on modern problem solving and focuses more on the application of rational analysis to problems (Voß & Bornemann, 2011; Boström, et al, 2017). The interplay between first-order and second-order reflexivity gives rise to reflexive modernization and reflexive governance.

A limitation of this study, however, is that it was not able to further explore the implications of the various links between governance and SD in each ideal type or address how countries with weak links between governance and SD might correct that problem through specific policy alternatives.

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