A configurational analysis of board involvement in intergovernmental organizations

ABSTRACT

Manuscript Type: Empirical

Research Issue: Research on board involvement has evolved and shifted towards seeking the appropriate role these boards should play in the strategy process. Current theoretical debates and inconclusive empirical findings in the literature point to an unresolved issue regarding the level of board involvement that is conducive to effective strategy formulation. This study aims to identify the levels of board involvement that are associated with highly effective and less effective strategy formulation.

Research Findings: We examine the boards of 16 intergovernmental organizations by conducting an inductive fuzzy-set qualitative comparative analysis to identify different levels of board involvement that are associated with highly effective and less effective strategy formulation. Our results illustrate that both active and less active board involvement are associated with highly effective strategy formulation, while an intermediate level of board involvement is associated with less effective strategy formulation.

Theoretical Implications: This study contributes to the literature seeking to understand board involvement in the strategy process. We build a multi-dimensional board involvement framework consisting of board dynamics, the use of director resources, and context. And we use the information-processing perspective to elucidate the relationship between different levels of board involvement and effective strategy formulation.

Practitioner Implications: Our findings suggest that the optimal level of board involvement in strategy formulation depends on an organization's complexity, a factor which determines its information-processing needs.

Keywords:

Corporate governance, board of directors, board involvement, strategy formulation, qualitative comparative analysis, intergovernmental organizations

INTRODUCTION

Research on board involvement in the strategy process has evolved over the years (Pugliese, Bezemer, Zattoni, Huse et al. 2009). Early scholarship emphasized the board's monitoring role (e.g., Fama & Jensen, 1983), assuming that boards merely ratified or rejected strategies formulated by CEOs (e.g., Herman, 1981; Lorsch & Young, 1990; Mace, 1971). A second wave of research focused on the board's advisory role, specifically on how boards provided input and advice during strategy formulation (e.g., McNulty & Pettigrew, 1999; Zahra & Pearce, 1989). Recently, an emerging trend has begun to explore active board participation in the strategy process and how boards could engage more with CEOs when formulating strategies (e.g., Fram, 2005; Judge & Talaulicar, 2017; Ravasi & Zattoni, 2006; Rindova, 1999). However, these research streams prompted theoretical debates and produced inconclusive empirical findings that generated the current puzzle on the relationship between board involvement and effective strategy formulation (Judge & Talaulicar, 2017; Pugliese et al. 2009).

Board involvement is defined as the level of attention that board directors give to the strategy process (Zahra & Pearce, 1990:165). It is also referred to as board engagement in the literature (e.g., Nicholson & Kiel, 2007; Van den Berghe & Levrau, 2004). The level of board involvement varies, which may facilitate or hinder effective strategy formulation (Judge &

Talaulicar, 2017). For example, the board may just rubber stamp strategies proposed by the CEO or it may also conceive and deliberate with the CEO different strategic options during the strategy process. Identifying the appropriate level of board involvement is important because it is associated with effective strategy formulation, which eventually leads to better strategies (Wheelwright, 1973). Highly effective strategy formulation yields high-quality strategies, whereas less effective strategy formulation produces low-quality strategies (Bourgeois, 1980). Strategy formulation is effective if the devised strategies target stakeholder needs or whether prior performance evaluation is aptly used to improve current strategies (Hendry & Kiel, 2004). Albeit, there is little consensus in the literature on the appropriate level of board involvement in strategy formulation in order to produce better strategies (Judge & Talaulicar, 2017). Therefore, we address this issue by answering the following research question: what are the levels of board involvement that are associated with highly effective and less effective strategy formulation?

Understanding the level of board involvement is challenging, as the extant literature focuses on organizations in which boards are not actively involved when their management teams formulate strategies. For instance, boards of corporations and public and non-profit organizations are expected, at most, to provide advice to their respective CEOs during the strategy process. Therefore, we explore board involvement in a type of organizational setting where boards are mandated and expected by their principals to be actively involved in formulating strategies: intergovernmental organizations (IGOs). However, despite this mandate, not all IGO boards are equally involved in the strategy process. Thus, IGOs are well suited as empirical subjects to study and identify the levels of board involvement that are associated with highly effective or less effective strategy formulation.

IGOs are transnational entities established by state governments (the principals) that

collectively aim to provide global public goods. Some examples include the World Bank (WB) that seeks to "end extreme poverty and boost shared prosperity," the World Health Organization (WHO) that strives for "all people [to attain] the highest possible level of health," and the United Nations Environmental Programme (UNEP) that aims "to provide leadership and encourage partnership in caring for the environment by inspiring, informing, and enabling nations and peoples to improve their quality of life without compromising that of future generations."

The governing bodies of many IGOs have adopted the three-level hierarchical governance structure typical of corporations (Martinez-Diaz, 2009). The first level is the plenary, consisting of member states as principals (comparable to corporate shareholders). The second level is the board, referred to with different names such as the Board of Executive Directors (WB), the Executive Board (WHO), and the Governing Council (UNEP). And the third level is the CEO that assumes different titles such as President (WB), Director General (WHO), and Executive Director (UNEP).

Many IGO boards are often actively involved in strategy formulation. For instance, in March 2017, the WB released a statement informing that its President and Executive Directors were working together to develop new operational strategies regarding the hunger crisis in sub-Saharan Africa and Yemen. Similarly, a communiqué released by the International Monetary Fund in June 2010 reported that its Director General and Executive Board had extensively discussed and deliberated different strategies regarding the provision of exceptional debt relief to poor countries hit by catastrophic natural disasters. These cases underscore the importance of understanding active board involvement in these organizations' strategy processes.

However, the Multilateral Organisation Performance Assessment Network (MOPAN) — an independent IGO that evaluates different IGOs funded by its member states— has determined

that several IGOs are less effective in formulating strategies, while others are highly effective. One reason IGOs differ in this respect may be the varying levels of board involvement. As mentioned, we set out to explore this phenomenon in our study.

To understand board involvement, we build a multi-dimensional framework —consisting of board dynamics, the use of director resources, and context— to propose a configurational approach in identifying the appropriate level of board involvement in strategy formulation. We use the information-processing perspective to explain the link between board involvement and effective strategy formulation. This perspective is appropriate to our study because we argue that boards process information regardless of the level of their involvement during the strategy process. We perform an exploratory set-theoretic approach (Rihoux, 2006) based on fuzzy logic to identify board involvement configurations. We refrain from advancing any theoretical propositions a priori because our study uses an inductive approach to build theory based on our findings (e.g., Campbell, Simon, & Schijven, 2016; Haxhi & Aguilera, 2016).

Our study contributes to corporate governance research in four ways. First, our research recognizes boards as strategic decision-making groups in organizations (Forbes & Milliken, 1999). We show that boards not only evaluate and ratify strategies formulated by the CEOs but also provide input and actively participate in the process of devising and choosing strategies.

Second, our paper explores the content of board involvement in strategy formulation (e.g. McNulty & Pettigrew, 1999; Rindova, 1999) by determining the level of board involvement in the strategy process. We present empirical evidence, identifying the appropriate levels of board involvement that are associated with effective strategy formulation. We find that both active and less active board involvement are associated with highly effective strategy formulation.

Interestingly, we also find that mixed board designs suggesting an intermediate level of board involvement is associated with less effective strategy formulation.

Third, our study also highlights the importance of context in understanding board involvement in strategy (e.g. Bailey & Peck, 2013; Edwards & Cornforth, 2003; Pettigrew & McNulty, 1995; Pugliese et al. 2009). We observe that the optimal level of board involvement depends on a specific contextual condition: organizational complexity, which determines the information-processing needs of an organization.

Finally, our research brings in public and non-profit governance knowledge to shed light to a current debate in corporate governance. Although our empirical subjects are IGOs, our findings on a subtype of public and non-profit organizations can be helpful to understand other types of organizations whose boards tend to participate intensely in strategy-making (e.g. Benz & Frey, 2007; Heath & Norman, 2004).

In the next section, we provide the theoretical background of our study. We then describe the research methodology and analytical approach. Next, we present the results of our research. Finally, we conclude by discussing the theoretical and practical implications of our findings, as well as recognizing the limitations of our study and suggesting avenues for future research.

THEORETICAL BACKGROUND

The literature has already acknowledged board involvement in the strategy process (e.g., Forbes & Milliken, 1999; Zahra & Pearce, 1989). However, there is an ongoing debate on the level of board involvement that is conducive to effective strategy formulation (Judge & Talaulicar, 2017; Pugliese et al. 2009). On the one hand, some scholars argue for less board involvement to maintain a certain degree of independence (Andrews, 1981; Herman, 1981) and avoid compromising the boards' monitoring role (Fama & Jensen, 1983). For instance, some studies

have found evidence suggesting that boards destroy value when they become involved in strategy formulation (e.g., Fulghieri & Hodrick, 2006; Hitt, Harrison, & Ireland, 2001). Other scholars have argued that the separation of boards from daily operations also increases information asymmetry and limits the boards' contribution to strategy formulation (Hendry & Kiel, 2004). Hence, scholars on this side of the debate advocate less board involvement, preferring boards play closer to a monitoring role by merely evaluating and eventually ratifying or rejecting the strategies proposed by their CEOs.

On the other hand, some scholars contend that boards can be more involved in devising strategies (Carpenter & Westphal, 2001). Boards not only evaluate proposed strategies but also suggest different alternatives (Andrews, 1980; Demb & Neubauer, 1992). These scholars view directors as independent thinkers (e.g., Davis & Thompson, 1994; Walsh & Seward, 1990) who provide input during the strategy process and help shape organizational strategic direction (McNulty & Pettigrew, 1999; Stiles, 2001). In this position, board involvement in strategy formulation is tantamount to playing an advisory role. There is evidence demonstrating the positive effects of increased board involvement as an advisory body in the strategy process (e.g., Filatotchev & Toms, 2003; Jensen & Zajac, 2004; Westphal & Fredrickson, 2001).

Although there is incongruity on the appropriate level of board involvement in strategy formulation, the literature also recognizes the dual role of boards as monitors and advisors in the strategy process (Hillman & Dalziel, 2003). Board involvement occurs along a continuum when formulating strategies (Ferlie, Ashburner, & Fitzgerald, 1994; Hendry & Kiel, 2004; Pettigrew & McNulty, 1995; Zahra and Pearce, 1989). Boards can perform both monitoring and advisory roles in strategy formulation by shaping the content, conduct, and context of strategies; evaluating proposed strategies; and approving or rejecting proposed strategies (McNulty &

Pettigrew, 1999).

However, an emerging research stream suggests that a more active board involvement in strategy formulation may be beneficial (e.g., Judge & Talaulicar, 2017; Ravasi & Zattoni, 2006). Scholars in this stream argue that boards are in best position to contribute to effective strategy formulation (e.g., Andrews, 1980; Goodstein, Gautam, & Boeker, 1994). A growing number of studies defines board involvement in strategy as active participation in strategic decision-making (e.g., Bailey & Peck, 2013; Forbes & Milliken, 1999; Pugliese et al. 2009). Boards actively scan the environment to acquire information, interpret incoming information, and conceive and choose the best alternatives available (Rindova, 1999). However, more active board involvement in the strategy process is yet to be comprehensively explored in the literature (Pugliese et al. 2009), underscoring the puzzle addressed in this paper.

To explore the appropriate level of board involvement in the strategy process, we build a multi-dimensional framework comprising board dynamics, the use of director resources, and context. Combining board dynamics and the use of director resources allows us to identify the level of board involvement (Forbes & Milliken, 1999). Including context in the framework helps us determine the appropriate level of board involvement in the strategy process (Pettigrew & McNulty, 1995). Our framework is patterned after a board strategic contribution model that combines board processes, inputs, and context in shaping board involvement in the strategy process (Edwards & Cornforth, 2003).

Conditions identifying levels of board involvement

Identifying the level of board involvement in strategy formulation is challenging, as shown by existing empirical research which uses a panoply of different proxies —such as board features, firm characteristics, and external contingencies— that are far "removed from board activity"

(Stiles & Taylor, 2001). For example, board size and demographic diversity (Goodstein et al. 1994), firm size and lifecycle (Daily & Dalton, 1993), and ownership concentration (Baysinger, Kosnik, & Turk, 1991) are among the indicators that do not necessarily capture board involvement in strategy. Hence, scholars suggest using different board features that reflect their activity and thus identify the level of board involvement in strategy formulation (Hendry & Kiel, 2004, Pettigrew, 1992; Stiles & Taylor, 2001).

To capture board involvement, we borrow from Forbes and Milliken's (1999) two constructs related to board activity: board dynamics and the use of director resources. Board dynamics refer to the degree of interaction among directors in the boardroom (Huse, 2005), while the use of director resources alludes to the process of coordinating and integrating individual capital contributions (Weick & Roberts, 1993). The interplay between board interactions and capital reflects the level of board involvement (Hillman & Dalziel, 2003).

Board dynamics. Frequency of board meetings and the existence of an executive committee are board dynamics that capture board involvement in strategy (Stiles, 2001). Board meetings are where important board processes take place, such as brainstorming and gathering ideas, debating strategic options, and actual decision-making through voting by directors (Stiles, 2001). Previous studies suggest that the *frequency of board meetings* shows the extent of boardroom activities (e.g., Adams, 2005; Brick & Chidambaran, 2010; Xie, Davidson, & DaDalt, 2003).

By contrast, the *executive committee* is a subgroup of the board consisting primarily of board directors standing in for the full board (Bilimoria & Piderit, 1994). It carries out various board functions such as helping in strategy formulation and overseeing implementation. Its presence suggests more interaction among directors, since it meets more frequently than the full

board and is often empowered to make strategic decisions without having to take them to the entire board for approval (Stiles, 2001).

We also consider if the board consists of full-time directors. *Full-time directors* devote their time and energies to board activities such as providing advice, serving on committees, and attending board meetings (Fram, 2005). They actively participate in decision-making because they are available whenever decisions need to be acted upon in a timely manner (Martinez-Diaz, 2009). Prior research provides evidence showing that full-time directors make substantial contributions to board functions and that they are more effective than part-time directors (Keys & Li, 2005).

Use of director resources. Director resources consist of a combination of human and relational capital (Hillman & Dalziel, 2003). Human capital includes skills, expertise, experience, knowledge, and prestige (Coleman, 1988; Provan, 1980), whereas relational capital refers to the network of relationships an individual or social unit has (Nahapiet & Goshal, 1998). However, the mere presence of these resources does not necessarily mean that the board takes advantage of them (Forbes & Milliken, 1999). Hence, we look at board features that reflect the use of director resources.

On the one hand, we determine human capital by using *director participation on many board committees*. Board committees serve to accomplish specific and highly important functions such as auditing, financing, budgeting, monitoring implementation (i.e., program committees in IGOs), and determining executive compensation. Directors often possess the functional expertise required by the committees to which they belong (Klein, 1988) and they are likely to be more actively involved in deliberations and decisions when participating in these committees as opposed to full board meetings (Kesner, 1988).

On the other hand, we look at *director involvement in CEO selection* to determine relational capital. When selecting CEOs, boards tend to choose a person with similar characteristics to those of the directors themselves (Zajac & Westphal, 1996). Thus, directors and the selected CEO tend to have a certain degree of shared and overlapping relational capital. This in turn causes directors to become more involved in the strategy process because of reduced social uncertainty (Kanter, 1977) and increased social integration between the board and the CEO (O'Reilly, Caldwell, & Barnett, 1989; Useem & Karabel, 1986).

The role of context in board involvement

The levels of board involvement in strategy formulation vary considerably (Boivie, Bednar, Aguilera, & Andrus, 2016) because of different contextual factors such as the type of organization, legal regulations, and institutional environments (Pettigrew & McNulty, 1995). The context provides the setting that determines the optimal level of board involvement in organizations. For instance, research has shown that non-profit boards are more involved in strategy formulation than for-profit boards (Judge & Zeithaml, 1992; Zhu, Wang, & Bart, 2016). Therefore, we include context as the third construct of our framework, together with board dynamics and the use of director resources, to explain the optimal level of board involvement in strategy formulation. Research on various public and non-profit organizations —of which our subjects are a subtype— has found that combining context with board features determines the appropriate level of board involvement in the strategy process (Edwards & Cornforth, 2003).

Organizational complexity. We argue that an organization's complexity is the contextual factor that determines the appropriate level of board involvement in the strategy process (e.g., De Andres & Vallelado, 2008). An organization's functional or occupational diversification reflects its complexity (Damanpour, 1996), for example, when an organization provides multiple

products or services that require carefully integrating different processes and resources (Robson, Katsikeas, & Bello, 2008). A more diversified organization has greater information-processing needs to cope with a broader range of technological and environmental constraints (Boivie et al. 2016). Research has shown that organizational complexity affects board structure and dynamics because of greater information-processing requirements (Coles, Daniel, & Naveen, 2008). Hence, the optimal level of board involvement should correspond to the varying degrees of organizational complexity required to cope with the information-processing needs in the strategy process (Henderson & Fredrickson, 1996).

In IGOs, the breadth of their scopes determines their complexity (Hooghe & Marks, 2015). IGOs that have broader scopes are more diversified and are thus more complex. For example, development banks (such as the WB and Asian Development Bank) are highly complex because they encompass all social and economic development sectors and issues related to infrastructures and the environment. On the other hand, UNICEF and WHO are less complex because their scopes only focus on health.

The information-processing perspective on board involvement

We draw on the information-processing perspective to understand the relationship between board involvement and strategy formulation. Information processing refers to a set of processes that occurs as information is taken in, transformed, and used to produce a specific outcome (Hinsz, Tindale, & Vollrath, 1997). This perspective conceives boards as information-processing groups that need to obtain, process, and share information to effectively perform their functions (Boivie et al. 2016). Its proponents primarily argue that we should analyze different barriers in bundles at the individual (e.g., outside job demands), group (board size, diversity, and frequency of meetings), and firm levels (organization size and complexity) because their combinations and

subsequent effects vary substantially across organizations when boards process information to undertake their tasks.

In our framework, we relate these barriers to three dimensions of board involvement. For instance, we associate diversity with the use of director resources that facilitate information processing. Similarly, other barriers such as frequency of board meetings, board size, and outside job demands correspond to board dynamics that facilitate or inhibit information processing. Finally, firm-level barriers such as size and complexity correspond to the context that determines the information-processing needs of an organization.

Echoing the information-processing perspective in boards, we argue that board dynamics, the use of director resources, and context jointly shape the level of board involvement to suit the information-processing needs of organizations in order to be effective in strategy formulation. Hence, using a configurational approach enables us to explore the combinatory effects of varying levels of board involvement and contextual factors on the strategy process (e.g. Pugliese et al. 2009). Moreover, we can also explore equifinality and causal asymmetry, as we identify which levels of board involvement in strategy formulation are conducive to or counterproductive for organizations (e.g. Judge & Talaulicar, 2017).

METHODOLOGY AND DATA

Qualitative comparative analysis

We conduct an inductive set-theoretic analysis to identify the configurations of board involvement in IGOs that are effective for strategy formulation. To identify these configurations, we use qualitative comparative analysis (QCA) facilitated by fs/QCA software. QCA is a research technique that relies on set-theoretic relations rather than correlations in analyzing causal conditions to determine the configurations that contribute to a given outcome (Fiss, 2007;

Ragin, 2008). QCA uses Boolean algebra by viewing cases as combinations of presence or absence of different conditions and by identifying whether such combinations are consistently producing a specific outcome (Ragin, 2008).

QCA comprises three main features to undertake configurational analyses (Misangyi, Greckhamer, Furnari, Fiss et al. 2017). First, it uses conjunctural causation by identifying multiple causal attributes (or conditions) that jointly lead to an outcome, in which a condition by itself cannot produce the effect (Schneider & Wagemann, 2012). Second, it allows us to explore equifinality, wherein different configurations may lead to the same outcome (Katz & Kahn, 1978). In this study, we explore different combinations of conditions that reflect board involvement associated with highly effective strategy formulation. And, third, it allows us to analyze for causal asymmetry (Berg-Schlosser, De Meur, Rihoux, & Ragin, 2009). Asymmetry means that the presence or absence of a given condition in configurations may result in the same outcome, depending on its combination with other conditions in the configuration (Misangyi et al. 2017). In our study, we examine whether the presence or absence of the conditions in configurations will be associated with the level of effectiveness in strategy formulation.

An in-depth discussion on how QCA works is beyond this study, since QCA has already been used in corporate governance research to conduct configurational analyses (e.g., Bell, Filatotchev, & Aguilera, 2014; Garcia-Castro, Aguilera, & Ariño, 2013; Haxhi & Aguilera, 2016; Misangyi & Acharya, 2014). However, it is important that we underscore the main advantage of QCA over correlation-based analyses. QCA integrates the best features of case and variable-oriented approaches to understand relationships between a combination of conditions and the outcome (Ragin, 2008). QCA enables us to return to the cases for more substantive analysis, thus allowing us to more closely examine the cases that may provide greater

information about the relationship being studied. In addition, QCA analyzes complex relationships and captures all three features of causal complexity: conjunctural causation, equifinality, and causal asymmetry (Misangyi et al. 2017).

Sample and dataset

Our sample consists of IGOs that we distinguish from non-IGOs by identifying the principals who founded them. For the purposes of our study, only those entities created by three or more state governments are considered IGOs. Bilateral agreements and those entities created by non-state actors are not IGOs. And, only those organizations that have an established secretariat are considered IGOs —for example, the G20 is not an IGO because it does not have a bureaucratic structure in place given that the essential secretariat functions rotate among the different member-state governments.

We build our dataset based on all IGOs (see Table 1) evaluated by MOPAN from 2011 to 2014. The 16 cases studied here are among the most prominent IGOs in the global arena because of their strong impact on global issues. Thirteen are global IGOs, and three are regional. All 13 global IGOs belong to the UN system; two are international financial institutions consisting of one global development bank (WB) and one development fund (IFAD), while the remaining 11 global IGOs are UN funds/programs and specialized agencies that address specific global challenges. The three regional IGOs are all development banks (Asian Development Bank [ADB], African Development Bank [AfDB], and Inter-American Development Bank [IDB]). All 16 IGOs are large in size with annual budgets of at least €100 million, which amply exceeds the €50 million annual turnover threshold set by the European Commission to define a large organization. The dataset in Table 2 consists of the outcome (effectiveness in strategy formulation) and conditions (board involvement).

Insert Tables 1 and 2 about here

Outcome: Effectiveness in strategy formulation

We operationalize effective strategy formulation using two measures: quality of strategy and quality and use of performance evaluation information (McNulty & Pettigrew, 1999). Quality of strategy refers to the strategy formulation output (Bourgeois, 1980). Contrarily, quality and use of performance evaluation information is associated with the board's role in the strategy process because such information is often used when formulating and improving strategies (Hendry & Kiel, 2004). Organizations with a high-quality performance evaluation and the appropriate use of evaluation information suggest effective strategy formulation (Stiles, 2001).

The data from MOPAN's assessments are publicly available. On the one hand, MOPAN bases the quality of IGO strategies on whether the formulated strategies meet four criteria: whether IGOs establish (1) results-based strategies; (2) organizational-wide strategies based on mandates; (3) strategies focusing on cross-cutting priorities identified by the mandate and international commitments; and (4) country strategies focused on results. On the other hand, MOPAN bases the quality and use of performance evaluation information on whether IGO performance evaluations meet two criteria: (1) evaluations comply with quality standards and control procedures; and (2) they are used in planning.

When carrying out its assessments, MOPAN reviews IGO official public and internal documents, internal and external performance reviews, and achievement reports. MOPAN evaluations rely on existing standards and guidelines and on substantial knowledge of specialists involved in the assessment. A score is generated on each criterion of strategy quality and the

quality and use of performance information. For our study, we took the average score of all the criteria. The data show that roughly half of the cases are effective in strategy formulation. We then transformed the average scores into fuzzy sets.

The crucial step in fuzzy set QCA is calibrating the variables. We calibrated the outcome by identifying those cases with highly effective scores and those that did not (e.g., Fiss, 2011), referring here to the latter as "less effective." Less effective in strategy formulation does not mean that the configuration shows ineffective strategy formulation. Rather, we distinguish between cases with very high scores, which we refer to as "highly effective," and those that do not have very high scores, referring to these as "less effective."

We use the direct calibration feature of fsQCA software (Ragin, 2006) and adopt the thresholds established by MOPAN: "very strong" for scores above 5.50 and "weak" for scores below 2.50. Since MOPAN's thresholds are based on its substantial knowledge of IGOs in practice, we use them as our thresholds for full membership and non-membership, respectively. MOPAN also sets 4.50 as the threshold for "strong" scores. We use this threshold as the maximum ambiguity or crossover point. Scores of at least 4.50 but below the full membership threshold are "more in", while scores below 4.50 but above the non-membership threshold are "more out".

Conditions: Board involvement

From our IGO database, we extracted different board features that reflect board activity. The information on IGO boards stems from the respective IGO documents prior to MOPAN's assessments to mitigate concerns regarding reverse causality. For example, data on the WB originates from its 2011 year-end annual report if it was assessed by MOPAN in 2012. Three independent and experienced researchers in the fields of management and international relations

coded the database and eliminated any inconsistencies in a second round to strengthen the coding's reliability.

The conditions are board features showing the level of board involvement. We use five conditions, the recommended amount for our small sample of 16 cases (Marx & Dusa, 2011). We discuss each board feature below and how they facilitate information processing for effective strategy formulation. Table 3 summarizes the coding scheme and calibration of conditions.

Insert Table 3 about here

Board dynamics. The conditions to determine board dynamics are: (1) high frequency of board meetings; (2) the existence of an executive committee; and (3) full-time directors. We excluded other conditions that might possibly impact board involvement in IGOs because they are constant across cases. For instance, board independence, measured by the ratio of outsider directors to total directors, is irrelevant in our analysis because all directors in IGO boards are insiders (i.e., member representatives). Similarly, CEO power is also constant across cases because the CEO is the chairperson in all IGO boards, and CEO compensation in IGOs is not set by boards but by the member states (i.e., the general assembly).

(1) *High frequency of board meetings*. In IGOs, directors are typically dispersed across different countries or even continents. This may prevent them from developing a sense of cohesion and trust for information-processing purposes if they meet infrequently or have fewer interactions (Boivie et al. 2016). Therefore, a higher frequency of board meetings makes directors spend more time together and increases their ability to collect and process information when formulating strategies (Westphal & Fredrickson, 2001). This condition is a continuous

variable, which we transform to fuzzy sets using direct calibration. The threshold for full membership is 12, the recommended number of meetings to increase familiarity with an organization's operations (Demb & Neubauer, 1992). Meanwhile, the threshold for full non-membership is one. The crossover point is four meetings, as substantiated by our qualitative data and prior research suggesting that quarterly board meetings are adequately active (Demb & Neubauer, 1992).

(2) *Existence of an executive committee*. The executive committee is a reduced version of the board that collects and processes information to filter different strategic options before presenting proposals to the board at large. Fewer directors streamline board processes because there are fewer decision-makers and it is easier to share information among executive committee members. Hence, we assume that board involvement is higher if there is an executive committee. Its presence is explicit in IGO documents. We code its existence as 1, while we register its absence as 0.

(3) *Full-time directors*. Full-time directors devote more time as board members to benefit the organization, and this limits the pressures of outside job demands (Boivie et al. 2016). Resident boards include full-time directors (Martinez-Diaz, 2009) and they are more involved in collecting and processing information because of their proximity to operations, putting them in a better position to recommend the appropriate strategic direction for the organization. IGO documents are explicit when declaring if their board is resident or not. We code the presence of this condition as 1 and its absence as 0.

Use of director resources. The conditions for the use of director resources are: (4) participation on many board committees; and (5) involvement in CEO selection. We eliminated those conditions that are constant across cases such as whether boards participate in budgeting

and the working program (all the IGOs do) or if boards are involved in removing the CEO (none of the IGOs are).

(4) *Participation on many board committees*. The existence of different board committees indicates functional diversity within the board, helping to generate ideas to define solutions and alternatives in the strategy process (McLeod & Lobel, 1992; Watson, Kumar, & Michaelsen, 1993). Committees help in developing specific knowledge to perform board functions (Kor & Sundaramurthy, 2009). In IGOs, committee membership requires having functional expertise and experience. Therefore, we argue that boards with many committees use more human capital, since directors are required to be more actively involved and they perform better at processing information in the strategy process. We coded having five committees as 1 (fully in) and three to four committees as 0.67 (more in), since prior research suggests that boards become active when they maintain three to five committees (Kesner, 1988). Meanwhile, we coded no involvement in any committees as 0 (fully out) and one to two committees as 0.33 (more out).

(5) *Involvement in CEO selection*. Although IGO boards do not appoint CEOs, they can nominate candidates, generally preselecting those with similar characteristics to their own (Zajac & Westphal, 1996). In so doing, IGO boards maintain a certain degree of relational capital with the CEO, thus facilitating streamlined communication and information sharing between them for effective strategy formulation. IGO documents clearly state whether the board can nominate the CEO. We code the presence of this condition as 1, while its absence is a 0.

Fuzzy set analysis

Using fuzzy set QCA, we analyzed the results for necessity and sufficiency of conditions in configurations. A condition is necessary if the outcome cannot be produced without it, while a condition is sufficient if it can produce the outcome by itself without help of other conditions

(Ragin, 2008). A condition is necessary if its presence or absence meets a consistency score of at least 0.90 to yield an outcome (Ragin, 2006).

We then identified the configurations that meet the recommended consistency and frequency thresholds for sufficiency analyses. Consistency is the notion of fit between different attributes that make a configuration (Ragin, 2006). It is the degree at which empirical evidence supports the necessity and/or sufficiency of set theoretic relations found in the analysis. The score ranges between 0 and 1, where 0 and 1 represent perfect consistency and 0.5 represents perfect inconsistency. We set our consistency threshold at 0.80 and proportional reduction in consistency (PRI) at 0.75, which is in line with best practices in conducting fsQCA for a small sample size (Ragin, 2008; Vergne & Depeyre, 2016).

The frequency threshold refers to the number of cases that must be observed for each configuration to be considered. We set our frequency threshold of one case per configuration, which is acceptable for small N analyses (e.g., Haxhi & Aguilera, 2016). Given that our analysis is inductive and exploratory in nature, our thresholds for consistency and frequency are appropriate to minimize solutions and further interpretations (Greckhamer, Misangyi, & Fiss, 2013).

Only those configurations that meet our consistency and frequency thresholds are presented with their respective coverage in a configuration table (Fiss, 2011). Coverage is a measure of empirical relevance that presents how cases are distributed over the configurations (Ragin, 2006). It ranges between 0 and 1, where 1 implies full representation, and 0 is the opposite.

We report the intermediate solutions in a configuration table showing presence and absence of conditions (Ragin & Sonnet, 2005). Intermediate solutions are configurations

accounting only for easy counterfactuals —those redundant conditions added to a set of causal conditions already leading to an outcome by itself (Fiss, 2011)— and are preferred as a point of departure in interpreting QCA results (Ragin, 2008). Because of our small sample size, the counterfactual analysis addresses limited diversity of observed cases (9 configurations with observed cases) in relation to possible configurations from the combination of conditions (a total of 32 possible combinations) reflected in the truth table. The fs/QCA software then reduces the truth table to determine the prime implicants of the solution. Given that our analysis is exploratory in nature, we do not specify any assumptions for presence or absence of a condition when reducing the solutions (Rihoux, 2006).

We use the following notations: "●" denotes the presence of the condition; "⊗" represents the absence of the condition; and a blank space refers to "don't care" conditions that may be either present or absent (also understood as not relevant) in configurations (Fiss, 2011). We also present the core and peripheral conditions. Core conditions (larger circles) are from both parsimonious and intermediate solutions, and peripheral conditions (smaller circles) are those that are eliminated in parsimonious solutions and thus only appear in intermediate solutions (Fiss, 2011: 403). Core conditions are considered as definitive ingredients in the solutions, while peripheral conditions are contributing ingredients in the solutions (Ragin & Fiss, 2008).

Exploring the effect of context to check for robustness

We also explored the effect of including a condition for organizational complexity to the level of board involvement. For this, we used a dichotomous condition: whether an IGO is a development bank or not. We consider development banks to be highly complex organizations because they have broader scopes, covering all social, economic, and environmental issues. Also, research has argued that banks are highly complex organizations with greater information asymmetry as

compared to other types of organizations (Furfine 2001; Levine, 2004). Complex organizations should have greater monitoring and information processing requirements (Boivie et al. 2016; Coles et al. 2008).

However, including this condition does not change the configurations that emerge from our analysis. There is also no improvement in consistency and coverage scores of the solutions. This is because we observed that the solutions neatly correspond to whether an IGO is complex or not. Therefore, we removed the condition for organizational complexity because the model we have used is robust.

RESULTS

We found no necessary conditions that produce the outcome. Also, none of the board features is sufficient on its own to yield the outcome. In line with equifinality, we found different configurations that are associated with the outcome. Table 4 presents the board involvement configurations that are associated with highly effective strategy formulation and those that are associated with less effective strategy formulation.

Insert Table 4 about here

Board involvement for highly effective strategy formulation

Two board involvement configurations that are associated with highly effective strategy formulation emerged from our analysis. The solutions have an overall consistency score of 0.92 and an overall coverage of 0.65 (see Table 4: Solutions 1 and 2).

Board involvement in highly complex organizations. Solution 1 —with a consistency score of 0.91 and a unique coverage score of 0.30— includes the presence of full-time directors

as a core condition. It also features a high frequency of board meetings, participation on many board committees, and involvement in CEO selection as contributing conditions. The presence of an executive committee is a "don't care" condition. This configuration suggests active board involvement because of increased interaction among directors and the increased use of director resources. Three development banks reflect Solution 1: ADB, IDB and WB. These banks are highly complex organizations with greater information-processing needs. Hence, we find that active board involvement is conducive for highly complex organizations to be highly effective when formulating their strategies.

By going back to our cases, we found that the WB board was indeed actively involved in strategy formulation. According to its 2012 annual report, directors possess all the essential expertise needed to serve on the board, and they were regularly present at the organization to meet with the CEO. The annual report also showed that the board and its committees worked repeatedly with top management to acquire and process information to conceive and develop strategies. In addition, board directors periodically visited member countries around the globe to meet with various stakeholders and gather information about how to proceed with the bank's projects and programs.

In sum, we found that increased board director interaction complements the increased use of director resources to facilitate better information processing in highly complex organizations. Active board involvement fits with greater information-processing requirements of highly complex organizations by going beyond rubberstamping and/or advising the decisions of the CEO during the strategy process. To produce high quality strategies in highly complex organizations, it is important for boards to initiate and conceive strategies, deliberate options with top management, and ultimately decide on the appropriate organizational strategies.

Board involvement in less complex organizations. Contrarily, Solution 2 —with a consistency score of 0.92 and a unique coverage score of 0.35— has three core conditions: low frequency of board meetings, absence of an executive committee, and absence of involvement in CEO selection. It combines participation on fewer board committees and the absence of full-time directors as contributing conditions. This configuration suggests less board involvement because of the combination of less director interaction and less use of director resources.

Three IGOs under the UN system have boards that align with Solution 2: UNEP, UNICEF, and IFAD. These IGOs are less complex because they have narrower scopes. For instance, UNEP concentrates on developing policies related to environmental protection, UNICEF focuses on providing humanitarian and development assistance to children and mothers in developing countries, and IFAD works to eradicate rural poverty in areas that are dependent on agriculture. With such specialized scopes, their information-processing requirements are fewer. Hence, this finding suggests that less board involvement is conducive to effective strategy formulation in less complex organizations.

One possible explanation is that fewer information-processing requirements may not require inputs from board directors during strategy formulation. In addition, information-sharing needs between the board and CEO may be lower. For example, we found that UNICEF's board is less involved in strategy formulation and simply rubberstamps CEO decisions. An extract from its Executive Board's 2010 annual report states: "The Executive Board takes note/approves the extensions of country programs approved by the Executive Director [CEO]."

In summary, less board interaction complements less use of director resources to yield highly effective strategy formulation in less complex organizations. It seems that the lower information-processing needs of less complex organizations do not require increased board

involvement during the strategy process. Hence, the board's role in strategy formulation in less complex organizations is limited to evaluating and approving proposals of the CEOs.

Board involvement for less effective strategy formulation

Although our focus is on exploring board involvement configurations that are associated with highly effective strategy formulation, we also present configurations related to less effective strategy formulation. In keeping with the causal asymmetry concept, our results show that the opposite conditions for those configurations that yield the desired outcome do not necessarily yield the opposite outcome.

We found three configurations of board involvement that are associated with less effective strategy formulation (see Table 4: Solutions 3, 4, and 5). These solutions have an overall consistency score of 0.88 and an overall coverage score of 0.74. IGOs with Solutions 3, 4, and 5 have narrow scopes, making them less complex organizations. For example, UNHCR and UNRWA focus on refugees, whereas UNDP is centered on developmental programs for the least developed countries. And, UNAIDS, UNFPA, and WHO target global public health issues. These organizations have less information-processing requirements, and increased board involvement may not be necessary to be effective in formulating strategies.

Solution 3 —with a consistency score of 0.82 and a unique coverage score of 0.43— has two core conditions: presence of an executive committee and participation on fewer board committees. It combines a low frequency of board meetings, the absence of full-time directors, and absence of involvement in CEO selection as contributing conditions. Three UN programs reflect Solution 3: UNHCR, UNAIDS, and UNRWA.

To illustrate, UNHCR reported in June 2013 that its executive committee was engaged in shaping and deliberating the content of its Global Strategic Priorities. The executive committee

was involved in the strategic process and constantly provided advice on the direction of the strategies. The executive committee members met more frequently, and they were regularly present at the organization. The presence of an executive committee may not be necessary in less complex organizations because their top management can already handle the information-processing needs during the strategic process. Similarly, the constant presence of directors at the organization through the executive committee may hinder the workings of top management (Xie et al. 2003).

Meanwhile, Solution 4 —with a consistency score of 1.00 and a unique coverage score of 0.19— has two core conditions: high frequency of board meetings and participation on fewer board committees. It combines the absence of an executive committee, the absence of full-time directors, and absence of involvement in CEO selection as contributing conditions. Two UN programs reflect Solution 4: UNDP and UNFPA.

Taking UNFPA as an example, its Executive Board's 2011 annual report revealed challenges in approving different programs and strategies. The directors met regularly and continuously requested reports from the Program Division. The board's report also showed that the head of the Program Division reiterated that such reporting consumed a lot of time, leaving less time to contemplate strategic options and the subsequent formulation of strategies. Consequently, strategy approvals were often delayed, and formulated strategies did not cover all the relevant issues. Again, increased board involvement in a less complex organization has shown to have a negative effect on strategy formulation.

Finally, Solution 5 —with a consistency score of 0.90 and a unique coverage score of 0.12— has three core conditions: low frequency of board meetings, the presence of an executive committee, and involvement in CEO selection. It combines the absence of full-time directors and

participation on many board committees as contributing conditions. One UN specialized agency reflects Solution 5: WHO.

The WHO secretariat is headed by a Director General (referred to as the CEO here) who is currently serving a second term. The board nominated the CEO that the member states eventually approved. This should typically facilitate better information sharing between the board and CEO and help improve strategy formulation. However, the WHO board became more involved in the strategy process and might have interfered with the workings of the secretariat that already had the expertise and experience to recommend the appropriate strategies. For instance, a report on the meeting between the executive committee and the CEO in 2013 revealed that the board typically spent time discussing strategic issues that should only be "noted" (being informed). Consequently, the approval of core policies and strategies suffered delays and did not reflect stakeholder needs.

In addition, Solutions 3, 4, and 5 also reveal the cost-benefit tradeoff of board involvement in the strategy process. As shown in Solution 2, board involvement in less complex organizations should be closer to the classic monitoring role of merely evaluating and ratifying or rejecting proposals by CEOs. Conversely, increased board involvement beyond strategy evaluation and approval in less complex organizations negatively affected strategy formulation. Although research has argued that monitoring is more important in older organizations (Aguilera, Filatotchev, Gospel, & Jackson, 2008) —such as the cases reflecting Solutions 3, 4, and 5, all of which encompass older IGOs—, it seems that the cost of increased monitoring and thus board involvement in strategy outweighs the benefits in less complex organizations. This finding is in line with prior research suggesting that excessive board monitoring and involvement can be detrimental to organizations (e.g., Burkart, Gromb, & Panunzi, 1997; Zajac & Westphal,

1994).

In sum, we find that an increased role of boards in strategy formulation is less effective in less complex organizations. This may be due to the fact that CEOs (and top management) already have the capabilities to meet the lower information-processing needs of such organizations. Consequently, board involvement in less complex organizations should be reduced closer to the monitoring role, which is evaluating and simply ratifying or rejecting the strategies their CEOs propose.

DISCUSSION AND CONCLUSION

This paper seeks to understand board involvement in a setting where boards are mandated by their principals to be actively involved in strategy formulation. With the unresolved issue in corporate governance research on what level of board involvement is appropriate in organizations, we present empirical evidence showing that both active and less active board involvement are associated with highly effective strategy formulation.

Theoretical implications

This research advances our understanding of the role played by boards in the strategy process in several ways. First, it suggests a multi-dimensional framework of board involvement using a combination of three constructs: board dynamics, use of director resources, and context. Concurrently, it proposes a configurational approach in identifying the optimal level of board involvement in strategy formulation. Since our focus is only on strategy formulation, we open a research avenue in order to map the entire strategic role of boards and encourage future studies to explore the relationship between the level of board involvement and strategy implementation. Both formulation and implementation interdependently affect the overall effectiveness of strategy in organizations (Bower & Doz, 1977).

Second, our configurational approach reveals different levels of board involvement that are associated with highly effective and less effective strategy formulation. Our study highlights the interplay of board dynamics and the use of director resources to identify the level of board involvement. We also illustrate the importance of context in determining the optimal level of board involvement to be effective in strategy formulation (e.g., Judge & Zeithaml, 1992; Zhu et al. 2016). It seems that organizational complexity —as a contextual condition— determines the optimal level of board involvement in strategy formulation. It would be interesting for future research to explore the role that other contextual factors (i.e., institutional and organizational) play in other board roles (i.e., control and service) and not just in strategy (e.g., Aguilera et al. 2008; Aguilera & Jackson, 2010; Forbes & Milliken, 1999; Desender, Aguilera, Crespi, & Garcia-Cestona, 2013; Garcia-Castro et al. 2013; Ward, Brown, & Rodriguez, 2009).

Third, our research helps conceptualize active and less active board involvement in the strategy process. Active board involvement occurs when directors participate in conceiving and formulating strategies prior to their ultimate board approval, whereas less board involvement is restricted to merely evaluating and ratifying or rejecting proposals by CEOs. The former is appropriate for highly complex organizations because of their greater information-processing needs, while the latter is suited to less complex organizations because of their lower information-processing requirements. These findings suggest limiting boards closer to the monitoring role in less complex organizations, and full board involvement in strategy —including evaluating strategies (i.e., monitoring role), advising the CEOs (i.e., advisory role), and making decisions with the CEO throughout the process (i.e., strategy role)— in more complex organizations. Further studies should identify the extent of monitoring, advising, and decision-making the boards contribute when devising strategies in complex organizations. Scholars argue that

monitoring and strategy are subsets of the board's control function (Hendry & Kiel, 2004), though performing both roles can be challenging (e.g. Golden & Zajac, 2001; Hillman & Dalziel, 2003). Research on whether these roles offset the effect of each other in the strategy process could be quite promising.

Fourth, our proposed board involvement framework may also be useful to determine the appropriate level of board involvement during strategy formulation in other types of organizations. For instance, public and non-profit organizations can benefit from our study to understand the link between governance structures and effectiveness of the strategy process. Research has shown that the boards of public and non-profit organizations sometimes become actively involved when devising strategies (Edwards & Cornforth, 2003). Scholars also argue that small and newly established firms need more active board involvement when devising strategies (e.g. Machold et al. 2011; Pugliese & Wenstøp, 2007). Yet, little do we know if such higher levels of board involvement help achieve effective strategy formulation in these organizations. Hence, our study paves an opportunity to explore whether the logic of organizational complexity will also determine the level of board involvement that is conducive to these organizations. It is probable that public and non-profit organizations are complex because of the competing interests of their stakeholders and their strong cultures—bureaucratic and mission-driven, respectively. Small firms may be complex because of their lack of structure and because they operate in innovative and turbulent environments. However, not all small for-profit, public and nonprofit organizations are equally complex. This study's findings may serve as a guide to understand when board involvement is positive and when negative in small enterprises, public agencies and nonprofits.

Practical implications

By using the information-processing perspective on boards, we also show the complementarity of board dynamics and the use of resources to facilitate effective strategy formulation. This complementarity, however, must be in accordance with the organization's complexity. Otherwise, a mismatch between board involvement and organizational complexity hinders the board's information processing. We suggest that boards should continuously interact and profusely use their resources and capacities to facilitate information processing when devising strategies in highly complex organizations. For instance, some large diversified corporations may be organizationally very complex or may have complex set of stakeholders that need to be dealt with by the board during strategy formulation. International joint ventures may also exhibit a high degree of organizational complexity emerging from bringing together very different parties (Reuer, Klijn, & Lioukas, 2014). And some small entrepreneurial firms funded by venture capitalists may produce technically very complex outputs or operate in highly unregulated and fluid environments (Gabrielsson & Huse, 2002). Perhaps, depending on their complexity, some of these organizations should require their boards to be more actively involved in the strategy process in order to produce better strategies.

Although greater board involvement improves information processing, it also has bureaucratic and coordination costs (Reuer et al. 2014). We find that this trade-off seems to be positive only in highly complex organizations (e.g., Boivie et al. 2016). There seems to be a trade-off between the value added by board involvement and the costs implied by it in less complex organizations. Boards should be separate from management and not necessarily use their resources and capacities when devising strategies in less complex organizations. These insights provide a board involvement framework that can inform board designs. Highly complex

organizations could consider designing their boards to be more active in the strategy process, while less complex organizations could restrict their boards to merely assume a role closer to the monitoring function.

Limitations

Our study also has its limitations. First, one of the criticisms of conducting a configurational analysis with a small sample (e.g., our study includes 16 cases) is the possibility of generating conclusions based on chance occurrence. However, the cases in our study consist of IGOs with very similar characteristics to mitigate any other conditions that may affect the relationship being studied, thus enhancing internal validity. Nevertheless, future studies should supplement our findings to establish how the configurations hold in larger samples, other types of IGOs, and other types of organizations.

Second, we only analyzed board features that reflect board activity. Board involvement can also be analyzed using other characteristics such as board factions, group culture, and CEO compensation (which is another determinant of CEO power). Also, many other exogenous factors (such as political elements, strategic orientation, and environmental pressures) and endogenous factors (such as group learning) may affect the strategy process. However, we have limited our analysis to five conditions given the constraint imposed by our small sample size and the complexity of the configurational approach we use (Greckhamer et al., 2013). Future research should expand this study to include other explanatory conditions for a more comprehensive configurational analysis.

Finally, QCA restricts our usage of time variation. Thus, we can only analyze the relationship for the respective time period. Our dataset is adapted to match the year that the effectiveness of strategy formulation was assessed and the information on the conditions used in

the analysis. For example, if the IGO was evaluated in 2012, we also picked the information on board features at the beginning of that same year. It would be interesting for future research to explore whether any changes in board features entail changes in the effectiveness of strategy formulation over time.

In conclusion, this paper offers corporate governance scholars a fresh perspective that deviates from the dominant research on board involvement. Our study demonstrates how active board involvement can be conducive to strategy formulation, well beyond the traditional monitoring and advisory roles assigned to boards. It provides insights on how organizations could design their boards to fit with their information-processing needs in the strategy process. Therefore, should boards be actively involved in strategy formulation? Our findings suggest that active board involvement is appropriate for highly complex organizations, whereas less board involvement is suited to less complex organizations.

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TABLE 1
Sample

Name	Acronym	Under the UN	Overall scope	Coverage	Assessment year
Food and Agriculture Organization of the United Nations	FAO	UN agency	Food and Agriculture	Global	2014
International Fund for Agricultural Development	IFAD	UN agency	Agriculture	Global	2013
Joint United Nations Programme on HIV/AIDS	UNAIDS	UN program	Health	Global	2012
United Nations Development Programme	UNDP	UN program	Development	Global	2012
United Nations Environment Programme	UNEP	UN program	Environment	Global	2011
United Nations Population Fund	UNFPA	UN program	Health	Global	2014
United Nations High Commissioner for Refugees	UNHCR	UN program	Refugees	Global	2014
United Nations Children's Fund	UNICEF	UN program	Health	Global	2012
United Nations Relief and Works Agency for Palestinian Refugees in the Near East	UNRWA	UN program	Refugees	Global	2011
United Nations Entity for Gender Equality and the Empowerment of Women	UN Women	UN program	Gender equality	Global	2014
World Food Programme	WFP	UN program	Food	Global	2013
World Health Organization	WHO	UN agency	Health	Global	2013
World Bank	WB	UN agency	Financial (Bank)	Global	2012
Asian Development Bank	ADB	No	Financial (Bank)	Regional	2013
African Development Bank	AfDB	No	Financial (Bank)	Regional	2012
Inter-American Development Bank	IDB	No	Financial (Bank)	Regional	2011

TABLE 2
Dataset

IGOs	**Conditions (board involvement)**					**Outcome**
Acronym*	High frequency of board meetings**	Existence of an executive committee	Presence of full-time directors	Participation on many committees	Involved in CEO selection	Effectiveness in strategy formulation
FAO	0.18	1	0	0.67	0	0.59
IFAD	0.05	0	0	0.33	0	0.88
UNAIDS	0.12	1	0	0	0	0.18
UNDP	0.50	0	0	0	0	0.44
UNEP	0.03	0	0	0	0	0.82
UNFPA	0.50	0	0	0	0	0.48
UNHCR	0.05	1	0	0	0	0.16
UNICEF	0.27	0	0	0	0	0.68
UNRWA	0.12	1	0	0	0	0.17
UN Women	0.27	1	0	0	0	0.71
WFP	0.05	0	0	0	1	0.42
WHO	0.12	1	0	1	1	0.21
WB	1.00	1	1	1	1	0.83
ADB	0.95	0	1	1	1	0.93
AfDB	0.95	1	0	1	1	0.43
IDB	0.95	0	1	1	1	0.89

*See Table 1 for complete IGO names.
**Annual

TABLE 3
Calibration of outcome and conditions

Variable		Type	Calibration		
			Membership degree	Criteria	Threshold/Code
Outcome	Effectiveness in strategy formulation	Continuous	Fully in	Very strong score	5.50
			Cross-over point	Adequate score	4.50
			Fully out	Weak score	2.50
Conditions	High frequency of board meetings	Continuous	Fully in	Monthly	12
			Cross-over point	Quarterly	4
			Fully out	Annual	1
	Existence of an executive committee	Crisp	Fully in	Yes	1
			Fully out	No	0
	Presence of full-time directors	Crisp	Fully in	Yes	1
			Fully out	No	0
	Participation on many committees	Continuous	Fully in	5 and above	1
			More in	3 to 4	0.67
			More out	1 to 2	0.33
			Fully out	0	0
	Involved in CEO selection	Crisp	Fully in	Yes	1
			Fully Out	No	0

TABLE 4
Configurations of board involvement in IGOs

	Highly effective strategy formulation solutions		**Less effective strategy formulation solutions**		
Configurations	**1**	**2**	**3**	**4**	**5**
Board dynamics					
(1) High frequency of board meetings	●	⊗	⊗	●	⊗
(2) Existence of an executive committee		⊗	●	⊗	●
(3) Presence of full-time directors	●	⊗	⊗	⊗	⊗
Use of director resources					
(4) Participation on many committees	●	⊗	⊗	⊗	●
(5) Involved in CEO selection	●	⊗	⊗	⊗	●
Context					
*Organizational complexity	High	Low	Low	Low	Low
Consistency	0.91	0.92	0.82	1.00	0.90
Raw coverage	0.30	0.35	0.43	0.19	0.12
Unique coverage	0.30	0.35	0.43	0.19	0.12
Solution consistency	0.92		0.88		
Solution coverage	0.65		0.74		
Cases**	ADB IDB WB	UNEP UNICEF IFAD	UNHCR UNAIDS UNRWA	UNDP UNFPA	WHO

Notes:
(a) ● = present (core); ● = present (peripheral)
(b) ⊗ = absent (core); ⊗ = absent (peripheral)
(c) A blank space is a "don't care" condition, which may be present or absent in a configuration.
*Organizational complexity refers to the context, which is the third dimension of our board involvement framework. Its inclusion in or absence from the solution does not change the solutions' consistency and coverage metrics.
**See Table 1 for complete IGO names.