Amin, H., Mohamed, E., Abdallah, A., & Elamer, A.A., (2024) 'National Culture, Formal Institutions and Structure of Board of Directors: Theory and Empirical Evidence', ***Journal of Financial Reporting and Accounting, Forthcoming,*** **(Accepted 22-Dec-2024).** DOI (10.1108/JFRA-07-2024-0431)

National Culture, Formal Institutions and Structure of Board of Directors: Theory and Empirical Evidence

[1] **Hala M. G. Amin**
Department of Accounting and Finance, Faculty of Management Technology, German University in Cairo, Cairo, Egypt
hala.amin@guc.edu.eg

[2] **Ehab K.A. Mohamed**
Department of Accounting and Finance, Faculty of Management Technology, German University in Cairo, Cairo, Egypt
ehab.kamel@guc.edu.eg

[3] **Amr Abdallah**
Department of Accounting, Faculty of Politics, Economics and Business Administration, May University in Cairo, Cairo, Egypt
amr.abdallah@muc.edu.eg

[4] **Ahmed A Elamer**
Brunel Business School, Brunel University London, Kingston Lane, Uxbridge, London, UB8 3PH UK
Gulf Financial Center, Gulf University for Science and Technology (GUST), Mubarak Al-Abdullah Area/West Mishref, Kuwait.
https://orcid.org/0000-0002-9241-9081
ahmed.elamer@brunel.ac.uk

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Abstract:

Purpose—This study explores how the structure of the board of directors is influenced by national informal culture values and the strength of formal institutional environments, as measured through legal regulations, market conditions, and investor protection regulations.

Design/methodology/approach- We analyze data from 432 companies listed in the S&P Global 1200 index utilizing structural equation modeling. National cultural dimensions from Hofstede's (2011) framework capture informal cultural aspects, while the World Bank's Worldwide Governance Indicators assess formal institutions. We examine board structure in terms of leadership style, board size, board independence, board committee structure, and board diversity.

Findings- The results reveal that national cultural values are negatively associated with rule of law institutions, indicating that culture can substitute for legal institutions, acting as "soft" regulation. Cultural values establish social norms and accountability when legal frameworks are weak. Additionally, national culture positively relates to open market institutions, enhancing transparency, fairness, and competition in strong markets. Our findings also show that national culture and formal institutions significantly shape managerial perceptions of the board's role and structure, impacting how firms prioritize monitoring versus resource provision.

Research Implications- Our findings offer valuable insights for managers in diverse institutional contexts, enabling them to adjust board structures according to cultural and institutional factors.

Originality/Value- The paper contributes to existing literature by focusing on complementarity as well as substitution mechanisms between national cultural characteristics and formal institutions in shaping board structure.

Keywords: investor protection institutions · national culture · institutional environment · Structural equation modeling · gender and nationality diversity · structure of board of directors

Paper type. Empirical

1. Introduction

National institutions have been a large part of international business theory (Cantwell et al., 2010**)**. These institutions, through their "formal laws and regulations" and "informal norms", determine how international business and competition take place (Fainshmidt et al., 2018). A line of corporate governance (CG) research embraced the belief that institutions amend the principle-agent relationship and accordingly "contextualization" of CG practices is necessary as argued by Filatotchev et al. (2013). As a result, several studies have increasingly focused on how firms adapt their governance practices to align with different environmental and institutional conditions (e.g., Amin et al., 2021; Agyei-Mensah et al., 2023; Bazel-Shoham et al., 2024; Lindahl et al., 2024; Pucheta-Martínez and Gallego-Álvarez, 2024; Teng et al., 2024).

Although there is extant literature showing the impact of national culture on country-level CG practices (Daniel et al., 2012; Duong et al., 2016; Griffin et al., 2017; Schiehll et al., 2014) and the effects of cultural characteristics on the structure of board of directors (BOD) (Amin et al., 2021; Grosvold and Brammer, 2011; Martinez-Garcia et al., 2024; Pucheta-Martínez et al., 2021; Pucheta-Martínez and Gallego-Álvarez, 2024; Schiehll et al., 2014), most research has rarely explored the degree to which these factors complement or substitute for one another in shaping board composition. Specifically, there is a gap in understanding whether strong formal institutions substitute for culturally rooted governance practices or reinforce them. The substitution perspective suggests that governance mechanisms replace each other based on efficiency and cost (Dalton et al., 2003; Rediker and Seth, 1995), while the complementary view suggests they enhance each other's effectiveness (Aguilera et al., 2008; Ward et al., 2009).

Furthermore, there is limited research on how national culture influences corporate board interactions and decision-making processes (Huang and Lu, 2023). Cultural norms can channel board composition towards wealth protection, focusing on stability and control in collectivist, hierarchically oriented cultures (Aguilera and Jackson, 2003; Pucheta-Martínez and Gallego-Álvarez, 2024), or towards wealth creation, emphasizing innovation and growth in cultures with high individualism and low uncertainty avoidance (Martinez-Garcia et al., 2024). This study aims to address these gaps by exploring the complementary and substitutionary effects between national culture, formal institutions, and board structures, providing insights into their alignment in global firms.

Using data from companies listed on the S&P 1200 index, this study investigates how national culture, as measured by Hofstede's (2011) cultural dimensions, and institutional factors (e.g., rule of law, open markets, and investor protection) influence board structure. The study reveals that national culture negatively correlates with rule-of-law institutions, suggesting that culture substitutes for weak legal institutions by serving as "soft" regulation and informal governance. Additionally, cultural values positively relate to open market institutions, promoting transparency and competition. The study also demonstrates that national culture influences

managerial perceptions of the board's role, affecting the prioritization of monitoring and resource provision, which impacts decisions on board composition.

These findings make several important contributions to the literature. First, it adds to the growing body of studies that have investigated the impact of cultural characteristics on BOD structure. Compared to prior research, much of which has been limited to testing whether a relationship exists, our study investigates the nature of complementarity and substitution between national cultural characteristics and formal institutions. In this respect, our research underlines the essential role of informal institutions and their deep impact on formal rules, and how such interaction makes its impact on CG at the firm level. By integrating both formal country-level institutions and informal factors with firm-level dynamics, the research enriches institutional theory and demonstrates its ability to explain variations in corporate governance practices across countries. Furthermore, our study addresses the call for a finer understanding of which institutions matter and encourages more cross-national multi-level theorizing in comparative CG research studies. It reveals in particular how formal institutions and informal factors, for example, cultural attitudes, shape dynamics at the firm level, including board structure.

The rest of the paper is structured as follows. Section 2 discusses the relevant literature and presents the main hypotheses. Section 3 outlines the methodology. Section 4 presents the results. Next, the results are discussed in Section 5. The final section summarizes and concludes up the study.

2. Literature Review and Hypotheses Development

Institutions play a critical role in shaping companies' organizational structures and strategies for competing and attracting investors (North, 1990; Scott, 2001). These institutional frameworks serve as external governance mechanisms that influence incentives or disincentives for adopting CG practices (Judge et al., 2008). The study examines three key formal institutional environments that govern business activities: (1) rule of law strength, (2) market openness, and (3) investor protection strength.

National Culture and Institutional Environment

A nation's CG practices are shaped by its institutional environment, similar to how natural laws govern crop cultivation. The institutional theory distinguishes formal institutions (laws and regulations) as part of a broader national culture, where informal institutions emerge to address recurring societal issues. Informal institutions are typically self-enforcing, as their long-term benefits outweigh short-term non-compliance gains, making them stable (Hampel et al., 2017). Research indicates that CG codes are influenced by cultural dimensions (Miska et al., 2018), meaning national cultures shape formal institutions. In some countries, weak informal institutions coexist with strong formal ones, while in others, strong informal structures accompany weak formal institutions (Kafouros et al., 2022). This discrepancy highlights the potential conflict between formal institutions, which emphasize standardized exchanges, and informal ones, which

rely on trust-based interactions, leading to inefficiencies when combined (Gilson, 2007). Additionally, parallel institutional structures incur inefficiencies (Hampel et al., 2017).

Formal and informal institutions are complementary, with each enhancing the effectiveness of the other, benefiting economic development and reducing managerial opportunism (Cruz-García and Peiró-Palomino, 2019; Witt and Jackson, 2016). In countries with strong formal legal institutions, informal institutions like trust and reciprocity help enforce compliance, improving the effectiveness of regulations. For instance, Japan's informal relational norms of accountability support corporate laws, enhancing CG (Elamer and Kato, 2024). This complementarity also contributes to economic growth, such as in Germany, where a balance between formal labor laws and informal cooperation between labor unions and firms boosts economic resilience (Rathgeb, 2022). Formal institutions rely on informal norms for legitimacy, making sudden changes challenging (North, 1990). When aligned, these institutions increase transparency, reduce managerial opportunism, and create stable environments for long-term investments (Acemoglu and Robinson, 2023). Trust and civic norms are stronger in countries with developed governance systems (Witt and Jackson, 2016). Therefore,

H_1: The national cultural environment has a direct influence on the country-specific formal institutional environment.

Institutional Environment and Structure of BOD

The institutional context acts as an external governance mechanism through the establishment of rules and policies, which influences the benefits or costs tied to firm-level governance practices (Nakpodia et al., 2023). This insight guides the formulation of the second set of hypotheses.

Rule of Law Institutions. Law enforcement varies across nations depending on the effectiveness of the judicial system; accordingly, enforcement of laws can be considered as a regulatory institution (Kafouros et al., 2022). For instance, Finland and Singapore depict to have a strong rule of law with effective law enforcement low corruption and well-protected property rights, whereas China and Portugal have a weak rule of law with underdeveloped property rights laws and ineffective judicial systems as well (Swaleheen, 2011).

In countries with strong rule of law institutions, the low levels of corruption and therefore managers' opportunistic behaviors are due to laws being effectively enforced (Tahir et al., 2020). It follows then that the investor should expect to place more trust in management whom they behave as stewards to accomplish business without much board interruption since agency problems have been reduced (Sama et al., 2022). Also, in such an environment there is much respect for the law, and transactions are organized in orderly, efficient, fair, and predictable manners (Judge et al. 2008; La Porta et al., 1999). Besides, there is a security for wealth and property rights against expropriation, since the judicial system effectively punishes unlawful managerial behavior (Swaleheen, 2011). Furthermore, there will be more opportunities for

entrepreneurship within such a strong rule-of-law environment since transaction costs working with external firms and partners are reduced (Ghauri et al., 2021).

As such, Kim and Ozdemir (2014) note that high-risk innovative investments call for complex decision-making in companies that focus on the long-run generation of wealth. Firms under such uncertain business conditions would, therefore, seek to have a diversified board with various skills and knowledge (Hassan et al., 2023), which aids in identifying and attracting entrepreneurial opportunities. A diversified board brings different perspectives and expertise through which access to critical resources may be facilitated (Amin et al., 2021). Overall, these results suggest that boards structured to enhance wealth creation pay off in countries where the rule of law institutions are strong, which implies that the rule of law and board effectiveness are complementary.

In countries with weak rule of law institutions, property rights are inadequately protected, leading to higher corruption and uncertainty in business exchanges (Judge et al., 2008). Business environments like these enable competitors to imitate innovations easily and without any legal consequences (Elamer & Boulhaga, 2024; Elamer & Utham, 2024; Eldaly et al., 2024; Usman et al., 2021; Millar et al., 2005). Such business conditions develop risk aversion among firms and ensure that they avoid risky long-term investments but opt for certain short-term investments. Hence, in the latter institutional environments, firms are less interested in creating wealth but rather rely on boards to discipline managers for their opportunistic behavior, which increases the agency problem. Because of this, the demand for a wealth-protective board is greater in a weak rule-of-law environment. Hence,

> *H_{2A}: In environments with weak formal rule of law institutions, firms are more inclined to have less diversified boards, with a greater emphasis on the monitoring role of the board, and vice versa.*

Open Market Institutions. According to Millar et al. (2012), open market institutions play a critical role in ensuring that there is an enabling environment for business opportunities and competitive markets at equal levels to national economic dynamics. In countries with very strong open market institutions, lower government regulations and fewer entry barriers make them more open to market forces, bring more competition, and increase entrepreneurial activities due to increased economic freedom at play (Millar et al., 2005, 2012). These institutions govern not only financial and legal restrictions, but also other restrictions associated with trading, investment, and capital flow (Kim and Ozdemir, 2014). Increased economic competition due to the reduction of trade barriers and financial deregulation urges managers to allocate resources in such a way as to maximize firm return efficiently (Schmidt et al., 2021). Otherwise, firms may fail in the competitive market or make inferior strategic decisions.

Under the competitive and open markets, higher costs are associated with managerial unethical behavior, which again indicates the importance of a "wealth protector" board in preventing such action. In such an environment, the boards derive strength from board members

who have extensive industry- knowledge since diversified skills enable them to adapt well to the market demand (Kim and Ozdemir, 2014). In dynamic global environments, diverse board member backgrounds in terms of nationality, tenure, and gender are critical in driving a board effectively through complexity and change (Zaman et al., 2024). Within such environments, emphasis on intellectual capital as a cornerstone of competitive advantage is in tune with the strategic responsibilities of the boards (Abdallah et al., 2024a). On the other hand, restrictive government regulations and trade barriers also protect competition, decreasing the focus of firms on efficient resource allocation. Hence, the benefits of boards with members from diverse nationalities, backgrounds, and genders are much valued in environments where strong open market institutions exist. Thus, it is also hypothesized that a complementary relation exists between open markets and "wealth creator" board members.

> *H_{2B}: In environments with strong formal open market institutions, firms are more inclined to have more diversified boards, with a greater emphasis on the resource provision role of the board, and vice versa*

Investor Protection Institutions. Such institutions also have an important function in molding the structures of CG, especially in defining the board's role to safeguard investors, including both shareholders and creditors, from insider expropriation (La Porta et al., 1999). These institutions vary across countries and generally influence internal governance structures through regulations that support investor rights. For instance, countries such as the United Kingdom and Singapore have strong investor protection with rigorous information disclosure requirements and legal provisions allowing minority shareholders to sue directors for misconduct. On the other hand, countries such as Japan and Spain have rather weaker investor protections, and these lead to different structures of board governance (Djankov et al., 2008; DeFond and Hung, 2004).

Where investors' rights are well protected, firms have greater incentives to increase transparency via regulated transparency platforms such as Bloomberg, making more informed investors who are then confident and thus can perhaps create wider national capital markets (Kim and Ozdemir, 2014). This transparency will facilitate market confidence and also shape investor expectations and enhance protection rights awareness which in turn forms a culture that convinces firms to focus on shareholders' wealth as argued by Boateng et al. (2021). According to Hsu (2010), firms ensure the alignment of board structure to the investor's interest by adopting proper monitoring roles which in turn enhance shareholder return and also form a mutual trust between the firm and investor.

Diverse board composition in terms of gender and nationality is especially desirable in contexts with powerful investor protection, bringing a wide range of skills and perspectives to the benefit of a firm (El-Dyasty & Elamer, 2021; Mahran & Elamer, 2024; Marie et al., 2024; Moubarak & Elamer, 2024; Owusu et al., 2023; Ullah et al., 2024). This is a type of board composition that would be better positioned to appraise different business opportunities and support management in the implementation of strategies, giving firms a competitive advantage by

attracting investors who consider diversity to be a signal of prudent governance and resourcefulness (Kim and Lim, 2010).

In such contexts, firms are also most likely to attract independent directors, adding credibility to the firm's commitment to the protection of shareholder wealth (Kim and Ozdemir, 2014). The presence of independent directors strengthens governance further by showing potential investors that the firm is identified with the goals of investor protection (Boateng et al., 2021). Consequently, by acquiring board structures that protect wealth in countries with strong investor protection institutions, firms obtain critical advantages and cost economies. This could suggest that companies that operate in strong investor protection environments prioritize having a board that protects wealth over having a diversified board, illustrating the substitution relationship between the two variables. Therefore,

> *H_{2C}: In environments with strong formal investor protection institutions, firms are less inclined to have diversified boards, with a greater emphasis on the monitoring role of the board, and vice versa.*

National Culture and Structure of BOD

The institutional theory postulates that formal norms, including those determining the structure and the role of BOD, are indicative of aspects of national culture (Toum et al., 2022). Therefore, if the structure of a board reflects these values within society, they can be positioned against the six cultural dimensions highlighted by Hofstede (2011). Hence, national culture has a significant impact on managerial perceptions of the role of the board and can influence how firms prioritize the board's monitoring and resource-provision functions (Amin et al., 2021). In this respect, Hofstede's cultural dimensions can serve as guidelines for gaining insight into these influences: masculinity/femininity; uncertainty avoidance; power distance; individualism versus collectivism; short- versus long-term orientation; and indulgence versus restraint.

Countries with low power distance, low uncertainty avoidance, individualism, long-term orientation, high indulgence, and a more feminine cultural orientation tend to stress the resource-provision role of the BOD (Grosvold and Brammer, 2011). This role of the board represents providing strategic guidance for the organization, expertise, development of networks, and promoting innovation. In the same way that engagement and self-efficacy drive innovation (Hassan et al., 2024), board structures that elicit engagement from members can also enable better governance and decision-making. Such an emphasis follows from the more open, collaborative, and forward-looking approach to CG in which the board is seen more as a development partner than as a supervisory body. Such boards are expected to secure intellectual capital and can be considered an important resource for organizational success (Abdallah et al., 2004b). By contrast, societies that represent the opposite of these respective characteristics would be more likely to emphasize monitoring as a primary function of the board. Accordingly, the societal

cultural profile may exert a profound influence on whether resource provision or monitoring is the primary focus of a board. Therefore,

H_3: The national cultural environment had a directive positive effect on the structure of BOD.

3. Research Methods

3.1. Sample selection and data collection

The sample includes companies from the Standards and Poor (S&P) Global 1200 index, covering 70% of global market capitalization, chosen for its broad representation of diverse countries and institutional attributes. The analysis period (2005–2013) is maintained to capture critical CG and investor protection events, notably the Global Financial Crisis (2007–2008), which underscored the importance of investor protection and transparency (Ahmad et al., 2023). The Sarbanes-Oxley Act (2002) also shaped compliance and had a continuing effect, as companies adjusted to meet demands for accurate disclosures (Liao et al., 2024). Cultural and regional factors, particularly in emerging markets like Asia and Latin America, highlighted the need for strong governance (Aguilera and Jackson, 2003; Buchanan and Deakin, 2024). Hence, the selected period allows for a focused analysis of those influential developments within a diverse cultural, economic, and institutional context. Extending the period beyond 2013 risks may introduce factors unrelated to this governance landscape, potentially diluting the study's focus.

The researchers created a large dataset combining national institutional characteristics at the country level with corporate board and firm data from ORBIS, BoardEx, and the World Bank database. We excluded financial firms, in line with previous studies (Amin et al., 2021; Ali et al., 2022), and those with two-tier boards, such as in Germany, Finland, Denmark, Switzerland, and the Netherlands. The data was aggregated at the firm level, and firms were classified into nine industrial groups based on the Global Industry Classification Standard (GICS). The final sample included 432 firms from 21 countries over 9 years, yielding 3,888 unique firm observations across various industries.

Table 1 reveals that the number of firms in the sample varies by country, with countries like Peru, Singapore, and Portugal having fewer firms, while the U.K., France, Japan, and the U.S. have a higher representation. Japan accounts for 29% of the firms, followed by France (19.7%), the U.S. (18.77%), and the U.K. (9%). Panel B shows the distribution of firms across nine industries, with the industrial sector leading at 37.1%, followed by consumer staples (13.9%) and consumer products (10.9%). Other sectors like materials, utilities, and healthcare make up smaller portions, totaling 15.6%.

Insert Table 1 here

3.2. Variables identification and measurement

This section discusses variable identification along with its measurement. Discussion includes identifying the following three groups of variables: exogenous, endogenous, and control variables.

3.2.1. Exogenous Variable

Informal Institutions -National Culture. Similar to prior studies (e.g., Huang and Lu, 2024), the current study uses Hofstede's (2011) scores to represent each country's cultural values. Hofstede's scores are the most widely used measures of national culture and have produced a widely accepted, well-defined, empirically based terminology to characterize culture. In addition, they are based on research within a business organization, which makes them appropriate for our study of CG practices. In this analysis, the following cultural dimensions are included: power distance, uncertainty avoidance, individualism/collectivism, masculinity/femininity, long-term/short-term orientation, and indulgence/ restraint. Hofstede's cultural dimensions are scaled on a scale that runs from 0 - 100 with 50 as a midlevel. The rule of thumb is that if a score is under 50 the culture scores relatively *low* on that scale and if any score is over 50 the culture scores *high* on that scale. To clarify the argument, Hofstede's cultural dimensions will be described in a dichotomous way, in terms of their poles (high or low).

3.2.2. Endogenous Variables

Formal Institutions. Institutional characteristics of countries are recognized in this research study as consistent with previous research by Amin et al. (2021), Kim and Ozdemir, (2014), and De Vito (2024). Country institutional characteristics are measured using the strength of three institutions; *rule of law*, *open markets*, and *minority investor protection.*

***(1) Rule of Law Institutions*.** Measured using the strength of the rule of law in each country, compiled from the Heritage Foundation's 2015 Index of Economic Freedom. It uses scores on property rights and anti-corruption institutions, where a high score indicates a strong rule of law, low corruption, and citizen trust in the judicial system (Millar et al., 2012).

(2) Open Market Institutions. Measured using trade freedom, investment freedom, and financial freedom scores from the Heritage Foundation's 2015 Index of Economic Freedom. Higher scores in these areas indicate fewer trade barriers, efficient resource allocation, entrepreneurial activity, and efficient banking systems, all contributing to a better economic environment (Millar et al., 2012).

(3) Investor Protection Institutions. This variable evaluates the protection of minority investors, using nine indices from the 2015 Doing Business Report. These indices measure national institutions safeguarding investors against managerial misuse, such as corporate transparency,

governance structures, and shareholder rights (Millar et al., 2012). Higher scores on these indices reflect stronger systems protecting investors.

Structure of Board of Directors. Below are the firm's BOD characteristics analyzed in this study by using an index to capture the following characteristics.

(1) Leadership style CEO duality is used as a proxy, coded as 1 if the CEO also serves as chairman and 0 if the roles are separate. This measure reflects the centralization of power in the boardroom.

(2) Board Size. The total number of members on the board may influence board monitoring and decision-making.

(3) Board Independence. Independent directors who, besides being appointed as directors, have no substantial business interest in the firm and whose only observable connection to the firm is being appointed as directors. The study measures the independence ratio for each firm by the number of independent directors divided by the number of total board members.

(4) Board Committee Structure. The study evaluates the presence of strategy-related committees within the board. A dummy variable is used, coded as 1 if a strategy committee exists and 0 otherwise. Examples include strategic planning or growth strategy committees.

(5) Board diversity is captured through the examination of the following: gender and national diversity of board members.

The Herfindahl Index of Gender Diversity is calculated based on the percentage of male and female board members following Kim and Ozdemir (2014) and Kamarudin et al. (2022). The index is rescaled so that its value ranges from 0 (all male or all female) to 1 (equal male and female representation). For national diversity, Shannon's entropy measure is used, where a value of 0 indicates that all board members come from the same country, and the value increases as more countries are represented. The final value is rescaled to range from 0 to 1, with the maximum value corresponding to the greatest diversity.

3.2.3. Control Variables

Country-level control variables. *Legal origin* significantly influences a country's institutional framework and level of investor protection, with common law countries offering stronger shareholder and creditor protection compared to French civil law countries, while German and Scandinavian law countries are intermediate (La Porta et al., 1999). This study classifies countries by legal origin, assigning a value of 1 for common law countries and 0 for others, following El-Feel et al. (2024). Additionally, *economic and financial development* shape CG; firms in developed economies adopt stronger governance due to benefits like improved capital access (Doidge et al., 2007). Economic development is measured by GDP per capita, and financial

development by stock market capitalization relative to GDP, as per World Bank indicators (Kim and Ozdemir, 2014).

Firm-level control variables. The analysis includes industry and sector controls, using GICS industry dummies and a sector dummy to distinguish between manufacturing (1) and service (2) sectors. Firm size, measured as the log of employees, with a squared log for non-linear effects (Huse, 1994; Kim and Ozdemir, 2014), affects board complexity. Financial leverage, calculated as the assets-to-equity ratio, reflects agency cost mitigation through debt (Jensen, 1986). Data from ORBIS and company websites also incorporate firm age, providing a comprehensive overview of factors impacting CG practices. Table 2 provides a summary of all the study's variables definitions and measurements.

Insert Table 2 here

3.3. Data Analysis

Using AMOS software, we tested the hypothesized relationships with structural equation modeling (SEM), which is favored due to its viable methods for handling complex relations between observed and latent variables while operating within a graphical user interface (Brauer et al., 2023). SEM helps improve the fit and predictive capability of a model while accounting for theory rather than simply minimizing prediction errors (Hair et al., 2019) as it enables analyzing more dependent and independent relationships at once. Initially, we analyzed the measurement model via exploratory factor analysis (EFA) to arrive at the latent factor structures followed by confirmative factor analysis (CFA) to determine their reliability and construct validity (Brown 2015). Lastly, we evaluated the structural model for causal paths between latent variables, which offered a strong method to test our theoretical hypotheses (Keline, 2015)

4. Results

4.1. The Measurement Model

4.1.1. Exploratory Factor Analysis

Principal component analysis with varimax rotation was conducted using SPSS to identify constructs related to national cultural and institutional environments and the BOD structure. After removing items with cross-loadings, four key constructs emerged. The first construct is the national cultural environment, which was based on Hofstede's six dimensions, split into two variables: one combining uncertainty avoidance, power distance, individualism, and indulgence, and the second including masculinity and long-term orientation. The second construct, institutional environment, derived from indices of the Heritage Foundation's Economic Freedom and the Doing Business report, resulted in three variables: rule-of-law, open market, and investor protection institutions. The final construct, BOD structure, included national diversity, gender diversity, and the independent director ratio. Items removed due to cross-loadings were CEO duality, board

committee structure, and board size. The remaining variables highlight the resource provision role of the board.

Further to check for the discriminant validity, all latent factors are included in a single EFA. As shown through the results of Table 3, the same variables loaded as in the preliminary EFA with one difference. However, while performing EFA for all the variables included in the study, masculinity, and long-term orientation had to be dropped because they cross-loaded on another component, which violated the condition of the discriminant validity. The constructs developed thus exhibit discriminant validity.

Insert Table 3 here

Accordingly, in light of such a result, the evaluation of our formal hypotheses of the relationships between the constructs below is proceeded with. Our full operational model is included in Figure 1.

Insert Figure 1 here

4.1.2.Confirmatory Factor Analysis

This section undertakes CFA to assess the unidimensionality, reliability, and validity of the measures for the study's latent constructs. The CFA uses two main approaches: assessing goodness-of-fit (GOF) criteria and evaluating validity and reliability. As shown by Table 4, indices of fit, such as GFI = 0.901, AGFI = 0.920, CFI = 0.943, NFI =0.933, and RMSEA=0.0), are largely in agreement with the recommended values, thereby suggesting the appropriateness of the model (Hair et al., 2019).

Insert Table 4 here

Table 5 assesses convergent and discriminant validity for the study's factors. Convergent validity, measured by average variance extracted (AVE), shows all factors exceed the 0.50 threshold except for investor protection institutions, which slightly fall below 0.465. However, with minimal correlations to other factors and a reliability score of 0.758, it remains acceptable. Discriminant validity is confirmed, as diagonal values surpass inter-factor correlations. Additionally, composite reliability (CR) scores for all factors are above 0.70, indicating strong reliability across the model factors (Hair et al., 2019).

Insert Table 5 here

Bivariate Pearson's correlations were conducted to evaluate inter-factor relationships and to check for non-linearity that could affect results. Table 6 presents the correlation matrix, showing significant correlations ($p<.01$) among all factors. The data reveal that cultural variables are strongly associated with the institutional environment. Additionally, institutional environment

variables have a strong correlation with the structure of BOD, while culture has a weaker correlation with BOD structure.

Insert Table 6 here

4.2. The Structural Model

To improve model fit, a direct path was added between observed and latent variables. The structural model was then constructed by linking the exogenous variable (national cultural environment) with four endogenous variables: investor protection, rule of law, open market, and the structure of the BOD. Additional exogenous variables included control factors at both the country and firm levels. This design is visually represented in Figure 1, illustrating the initial structural model of the study.

The model fit was assessed using Chi-square, CMIN/DF, GFI, AGFI, CFI, NFI, and RMSEA (Tabachnick and Fidell, 2001). To improve fit, modification indices suggested covarying certain error terms (e.g., e1 with e2). While a significant Chi-square ($\chi^2 = 3856.418$, df = 330, $p < 0.05$) indicated a poor fit, Chi-square is sensitive to sample size and normality violations (Jöreskog, 1969). Thus, other indices were prioritized: GFI = 0.959, AGFI = 0.911, CFI = 0.938, NFI = 0.933, and RMSEA = 0.030, supporting a good fit (Arbuckle and Wothke, 2004; Brown, 2015), as shown in Table 7.

Insert Table 7 here

Hypotheses were tested with controls for economic development, legal origin, industry, firm size, and leverage. Results in Table 8 support H1, showing a negative relationship between culture and rule of law institutions (standardized regression weight = -0.477, $p < 0.01$) and a positive association with open market institutions (standardized regression weight = 0.628, $p < 0.01$), though not significant for investor protection institutions (standardized regression weight = -0.019, $p > 0.05$), partially accepting H1. Findings support H2, with rule of law institutions negatively impacting BOD structure (standardized regression weights = -0.301 and -0.101, $p < 0.01$), while open market institutions show a positive association (standardized regression weight = 0.390, $p < 0.01$) and investor protection institutions a negative one (standardized regression weight = -0.441, $p < 0.01$). H3 is supported by a negative relationship between culture and BOD structure (standardized regression weight = -0.447, $p < 0.05$).

Insert Table 8 here

5. Discussion

This section discusses the results of the study on how national cultural values and formal institutions influence the structure of BOD in various countries. The first hypothesis proposes that there is a significant relationship between the prevailing cultural values of a nation and its formal institutional framework. The results indicate that the national cultural environment negatively

affects the rule of law institutions in a country. It would, therefore, indicate that the specific characteristics of the nation's cultural environment influence the performance of the country's legal institutions. These findings do suggest, in particular, that the stronger the influence of informal institutions- societal norms and civic values-the weaker the legal frameworks. This would thus imply that informal institutions could be a form of "soft legislation" with consequences for the "hard legislation", or formal legal channels. This finding agrees with Kaufmann et al. (2005) and Peng and Jiang (2010), supporting the institutional theory, which underscores the role of culture in making a formal institution effective, especially when the mechanisms of formal governance are underdeveloped.

The national cultural values are also found to be strongly positively related to open market institutions. Open market institutions can be defined as the policies and regulations that provide for openness and competitiveness of the market. This positive association would suggest that informal institutions such as trust and social capital thrive in countries with well-established economic and legal structures. The result is consistent with other studies highlighting that the effectiveness of formal institutions often depends on the underpinning support coming from informal institutions (Cruz-García and Peiró-Palomino, 2019). However, there was no significant association between the national cultural values and the strength of investor protection. Contrary to previous studies that support the presence of a relationship between cultural values and investor protection, our result shows that mere culture may not be good enough to guarantee full protection for investors. Rather, other factors such as reputation, social norms, and repeated market interactions are more influential in encouraging good behavior and lessening expropriation risks in firms.

The results of the second hypothesis reveal the relationship between the strength of the formal institutions (i.e., rule of law, open markets, and investor protection institutions) and the structure of the BOD. Our findings research show that a board structure that focuses on the role of resource provision is inversely related to the quality of rule-of-law institutions. In rule-of-law environments, for instance, which are relatively weak, the BOD often becomes the primary mechanism for disciplining management. Within such a context, the firms reap more benefits from boards oriented around vigilant monitoring and wealth protection, rather than diversity. Environments with weak rules of law discourage a firm from making long-term investments due to insecure property rights and inefficiencies of the law. As a result, the benefit of having more wealth protector board is greater than a board that includes diversified members in such weak rule of law environments.

The study explores the impact of open market institutions on board structure, finding a positive relationship. In countries with strong open market institutions, firms benefit from boards with diversified gender, nationality, and independent directors, aligning with Schmidt et al. (2021), who noted that such environments require governance structures that foster agility and innovation. Conversely, the relationship between diversified boards and investor protection institutions is negatively significant. In countries with strong investor protection, firms benefit less from

diversified boards, as strong protections reduce the need for diversification to safeguard investors. This finding is consistent with Boateng et al. (2021), suggesting that in such environments, firms focus more on wealth protection than on incurring the costs of diverse boards.

Finally, this paper demonstrates how national culture is an important determinant of board structure. The cultural orientation of a country may influence the extent to which boards are structured to provide resources versus to function as a monitoring body. This finding aligns with previous research by Licht et al. 2007 that suggests that corporate board structure and functioning are deeply influenced by national cultural orientations. For example, boards in countries characterized by highly hierarchical cultures may retain more traditional, homogeneous structures while diverse, merit-based board appointments could be promoted more strongly in countries characterized by more individualistic cultures. Such cultural influences are critical for understanding how the actual practices, especially board composition, vary within national contexts. We also find support in Pucheta-Martínez et al. (2021), where the authors indicated that the cultural dimensions of power distance, individualism, and indulgence positively influence the proportion of women directors on boards.

6. Conclusion

This study explores the relationships between national culture, institutional environments, and the structure of boards of directors (BOD) across countries, using structural equation modeling on data from 432 companies listed in the S&P Global 1200 index. The findings show that national cultural values significantly influence both institutional frameworks and BOD structures. Informal institutions like societal norms can substitute for weak formal legal systems, while national culture and open market institutions can complement each other in environments with fewer restrictions. The study also highlights that wealth-protecting boards are crucial in weaker legal environments, while diversified boards are more beneficial in countries with strong open market institutions. Additionally, national culture influences managerial perceptions of the board's role, affecting how firms prioritize the monitoring resource-provision functions of the board, such as whether to have a more or less diversified board.

The findings of this study contribute both theoretically and empirically to the literature. Theoretically, it highlights the importance of informal institutions and their interaction with formal rules, demonstrating how these dynamics affect firm-level CG practices. By integrating both country-level formal institutions (such as legal and economic protections) with informal factors (like trust and cultural attitudes), the study responds to calls for better identification of key institutions and more cross-national, multi-level theorizing in comparative CG research. Empirically, the study combines data from ORBIS and BoardEx, along with governance data from proxy statements, to create a unique dataset. Country-level data is sourced from the Heritage Foundation and World Bank, while cultural dimension scores are based on Hofstede's research. This comprehensive data set provides a valuable opportunity to explore these issues in one study.

The study has several implications for various stakeholders. For policymakers, it suggests that CG practices can be influenced by altering the institutional environment, such as controlling corruption, strengthening the rule of law, or improving government effectiveness. In terms of legal implications, the findings contribute to the debate on hard law (e.g., US Sarbanes-Oxley Act) vs. soft law (e.g., UK Combined Code) approaches to CG regulation. The results indicate that a soft law approach may be more beneficial from an economic efficiency perspective, as firms in the same country can self-regulate and adopt governance practices that complement existing ones, leading to better financial performance. From a managerial standpoint, the study underscores the importance of aligning governance practices with a firm's strategic priorities and the local environment, rather than merely adopting foreign governance models. This understanding is key to improving governance effectiveness and business performance. Further research could explore how hybrid intelligence systems (Marzouk et al., 2024) might assist boards of directors in making complex decisions involving different cultural and institutional factors.

There are some limitations that future studies could address. For example, the theoretical limitations of the study include limiting the country-level CG practices to only four national institutional factors. Moreover, the list of BOD characteristics included in our analysis has been limited, with such a large sample size, we were unable to collect data on further characteristics of the BOD for all firms included in our study. Empirically, the study is limited to listed firms only, which limits the generalization to unlisted firms. The limitation of findings also relates to the exclusion of two-tier boards from the sample, as well as to the exclusion of non-financial firms. Future research could explore these areas for a more comprehensive understanding.

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Table 1: Sample Summary Distribution by Country and Industry (Source: Authors' own work)

Country/Industry	**Total Sample**	
Panel A: sample distribution by country		
	Number of observations	***%***
Japan	1125	28.91
France	765	19.7
USA	738	18.99
UK	351	9
Brazil	99	2.5
Italy	90	2.3
Chile	81	2.1
Korea	81	2.1
Spain	81	2.1
Taiwan	81	2.1
Belgium	72	1.9
Hong Kong	72	1.9
Mexico	63	1.6
Luxembourg	54	1.4
China	36	0.9
Ireland	27	0.7
Portugal	27	0.7
Singapore	18	0.5
Colombia	9	0.2
Finland	9	0.2
Peru	9	0.2
Total	**3888**	**100**
Panel B: sample distribution by industry		
Industrial	1443	37.1
Consumer Staples	541	13.9
Consumer Products	415	10.7
Materials	379	9.8
Utilities	290	7.5
Health Care	244	6.3
Energy	199	5.1
Telecom	191	4.9
Information Technology	181	4.7
Total	**3888**	**100**

Table 2: Summary of Variables Identification and Measurement (Source: Authors' own work)

Variable	Proxy	Description	Source
Exogenous Variable			
Informal Institution	National Culture	Six cultural dimensions: power distance, uncertainty avoidance, individualism/collectivism, masculinity/femininity, long term/short term orientation, and indulgence/ restraint.	Hofstede and Hofstede, 2001
Endogenous Variables			
Formal Institutions	(1) Rule of Law Institutions	compiling scores of Property Rights Index and Freedom from Corruption Index.	Heritage Foundation's 2015 report on Index of Economic Freedom
	(2) Open Market Institutions	compiling scores of Trade Freedom Index, Investment Freedom Index, and Financial Freedom Index.	
	(3) Minority Investor Protection	Minority Investor Protection Index	Doing Business Survey, 2015
Board of Directors Characteristics	(1) Leadership Style (CEO Duality)	dummy variable: 1 the roles of CEO and chairman are for the same person; 0 in case it is separate.	BoardEx and corporate annual reports
	(2) Board size	the number of members of the board of directors	
	(3) Board independence	the numbers of independent directors to the total number of directors	
	(4) Board Committee Structure	Dummy variable that takes the value of 0 if no strategy related committee exists and, 1 if otherwise	
	(5) Board Diversity	Gender Diversity: 0 when all board members are male or female, increasing to 1 when gender diversity rises to yield an equal representation of males and females. National Diversity: 0 if board members all come from one country and 1 if more countries are represented on the board	
Control Variables			
Firm Characteristics	(1) Firm size	Logarithm of number of employees	ORBIS
	(2) Capital Structure	Financial leverage: Total assets divided by equity	ORBIS
	(3) Firm age	the logarithm of number of years since the company was established	Corporate websites
	(4) Firm's Industry	dummy variables: 1 Energy sector, 2: Materials sector, 3: Industrial, 4: Consumer Discretionary, 5: Consumer Staples, 6: Health Care, 7: Information Technology, 8: Telecommunication Services, and, finally, 9: Utilities	ORBIS
	(5) Firm's Sector	dummy variables: 1 Manufacturing sector, 2 Service sector	ORBIS
Country Characteristics	(1) Country's Legal Origin	A dummy variable of 1 for common law countries and 0 for civil law	La Porta et al., 1999

	(2) Country's Economic Development	Logged gross domestic product (GDP) per capita	World Bank, 2015
	(3) Country's Financial Development	Stock market capitalization over GDP	World Bank, 2015

Table 3: Rotated Component Matrix for the Full Model (Source: Authors' own work)

	Component				
	1	2	3	4	5
Individualism	**.856**	-.121-	-.200-	-.149-	-.296-
Indulgence	**.550**	-.165-	.435	.094	-.363-
Uncertainty Avoidance	**.821**	-.234-	.100	-.164-	.168
Power Distance	**.813**	-.058-	-.812-	-.060-	.185
BOD Gender Diversity	-.098-	**.790**	.169	.091	.040
BOD National Diversity	-.094-	**.739**	.228	.052	.222
Board Independence	-.373-	**.672**	.284	.119	-.283-
Minority Investor Protection	.217	.267	**.845**	.083	-.093-
Index of Conflict of Interest	.505	.072	**.778**	-.010-	.103
Extent of Disclosure Index	-.276-	.172	**.847**	.138	.146
Director Liability Index	.031	.223	**.750**	-.024-	.044
Property Rights	-.134-	.104	.045	**.815**	-.129-
Corruption Freedom	-.054-	.068	.082	**.845**	.039
Trade Freedom	-.084-	-.310-	.069	-.118-	**.861**
Financial Freedom	-.135-	.189	.069	.018	**.929**
Investment Freedom	.082	.177	-.152-	-.019-	**.911**
Note: Extraction Method: Principal Component Analysis. Rotation Method: Varimax with Kaiser Normalization. a. Rotation converged in 5 iterations.					

Table 4: Goodness of fit statistics for the CFA (Source: Authors' own work)

Overall fit Summary (n=3888)		
	Results	*Acceptable Fit Standard*
Statistical tests		
Chi-square	3856.418	NA
Df	330	NA
Chi-square/df	11.686	<3.00
Fit indices		
GFI	0.901	Close to 1
AGFI	0.920	Close to 1
CFI	0.943	Close to 1
NFI	0.933	Close to 1
Residual analysis		
RMESA	0.048	<0.08
Note: df = degree of freedom; GFI = Goodness of fit index; AGFI= Adjusted Goodness of fit index; CFI = Comparative fit index; NFI = Normed fit index; RMSEA = Root mean square error of approximation.		

Table 5: Results of Validity and Reliability (Source: Authors' own work)

		CR	AVE	1	2	3	4	5
1	Structure of BOD	0.724	0.580	0.750				
2	Culture	0.731	0.578	-0.602	0.760			
3	Rule of Law Institution	0.753	0.605	0.282	-0.303	0.778		
4	Open Market Institution	0.842	0.651	0.691	-0.807	0.295	0.850	
5	Investor Protection Institution	0.758	0.465	0.586	-0.726	0.229	0.726	0.790

Note: BOD = board of directors

Table 6: Descriptive statistics and correlation analysis (Source: Authors' own work)

	Mean	SD	Culture	Rule of Law	Open Market	Investor Protection	BOD Characteristics
Culture	.56	.22	1				
Rule of Law	2.27	.10	.019	1			
Open Market	1.63	.06	.219**	.612**	1		
Investor Protection	.62	.07	.026	.493**	.425**	1	
BOD Characteristics	.14	.14	.262**	.235**	.540**	.019	1

Note:

BOD = board of directors

**Correlation is significant at the 0.01 level (2-tailed)

Table 7: Structural Model Fit Measure Assessment (Source: Authors' own work)

	Results	***Acceptable Fit Standard***
Statistical tests		
Chi-square	3856.418	NA
Df	330	NA
Chi-square/df	11.686	<3.00
Fit indices		
GFI	.959	Close to 1
AGFI	.911	Close to 1
CFI	.938	Close to 1
NFI	.933	Close to 1
Residual analysis		
RMESA	.030	<0.08
Note: df = degree of freedom; GFI = Goodness of fit index; AGFI= Adjusted Goodness of fit index; CFI = Comparative fit index; NFI = Normed fit index; RMSEA = Root mean square error of approximation.		

Table 8: Regression Weights of Variable (Source: Authors' own work)

			Standardized β	Unstandardized β	S.E.	C.R.	P
Rule of Law Institutions	<---	Culture	-.477	-.153	.009	-17.981	***
Open Market Institutions	<---	Culture	.628	.127	.023	5.480	***
Investor Protection Institutions	<---	Culture	-.019	-.004	.006	-.789	.430
BOD Characteristics	<---	Rule of Law Institutions	-.101	-.148	.024	-6.038	***
BOD Characteristics	<---	Open Market Institutions	.390	.905	.045	19.959	***
BOD Characteristics	<---	Investor Protection Institutions	-.441	-.925	.032	-29.208	***
BOD Characteristics	<---	Culture	-.477	-.224	.009	-26.150	***

Note: BOD = board of directors

Figure 1: Full Theoretical Model- Culture, Formal Institutions, and Structure of BOD (Source: Authors' own work)