Corporate Governance Configurations and Corporate Social Responsibility Disclosure: Qualitative Comparative Analysis of Audit Committee and Board characteristics

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Abstract

Drawing on the complexity theory and responding to the recent calls to use such creative methods that mix between a quantitative and qualitative approach. This study fills the literature gap adding novelties, showing evidences from the unexplored (or underexplored) European context and, consequently, shedding light to inconclusive results in previous studies regarding the influence of audit committee and board characteristics on CSR Disclosure by applying a novel research methodology: the fuzzy set qualitative comparative analysis (fsQCA).

The data were collected from Eikon database for a sample of the top 69 non-financial European companies (based on market capitalisation) for the period 2016–2018. The study results support the equifinality and complexity tenets of complexity theory. It also suggests that CSR Disclosure depends on a complex configuration of some audit committee attributes, for instance, independence, members with accounting and financial expertise, chair independence, size and activity, and other board characteristics (independence, gender, size, activity, and CEO duality). These characteristics play a leading role as the ingredients of the recipe and, in an appropriate combination, promote achieving high levels of CSR Disclosure. Our empirical results offer multidimensional and valuable insights for professionals, regulators, and policymakers in establishing and revising the guidelines related to the composition of the audit committee and board of directors.

Keywords: Audit Committee, Board Characteristics, Corporate Social Responsibility, Complexity Theory, Qualitative Comparative Analysis, Fuzzy Set.

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Introduction

Corporate social responsibility is one of the main issues that has been brought to the fore by corporate governance in the recent decade, and this is mainly because of its role in showing a company's commitment towards Corporate Governance (CG) and ensuring its public accountability (Harjoto & Jo, 2011). As a fundamental CG feature, the board of directors has an essential role in aligning management concerns with those of stakeholders (Harjoto, Laksmana, & Lee, 2015). Shareholders elect board of directors to control and manage companies' matters (Monks & Minow, 2008). However, the efficiency of the board's supervisory role is measured among various board characteristics (Brick, Palmon, & Wald, 2006; Shahzad, Rutherford, & Sharfman, 2016). Thus, board characteristics are expected to affect the level of CSR.

Audit committee is one of the most critical CG controlling mechanisms that it is existence and characteristics would enhance board oversight, improve auditors performance, and reduce the asymmetry of information between managers and different stakeholders, hence, improve the level of companies' disclosure, such as CSR (Mangena & Pike, 2005). The traditional role of the Audit Committee (AC) is primarily concerned with mandatory financial disclosure; however, after Corporate financial scandals such as Enron in US, this role has expanded into non-financial disclosure such as CSR (Kolk & Pinkse, 2010). One of the factors that enhanced the quality and transparency of financial reporting is the adoption of the international financial reporting standards (IFRS), which has also enriched the broader role of ACs to monitor both the mandatory and voluntary disclosures such as CSR (Appuhami & Tashakor, 2017). A variety of authors indicate a significant

positive relationship between the existence of AC and the level of CSR disclosure (Said, Zainuddin, & Haron, 2009; Khan, Muttakin, & Siddiqui, 2013; Barakat, Perez, & Ariza, 2015).

The literature on the relationship between CG and CSR has grown expeditiously in recent years (i.e., Bear, Rahman, & Post, 2010; Jo and Harjoto, 2011; Post, Rahman, & Rubow, 2011; Khan et al., 2013; Frias-Aceituno, Rodriguez-Ariza, & Garcia-Sanchez, 2013; Jizi, Salama, Dixon, & Stratling, 2014; Fernandez-Feijoo, Romero, & Ruiz-Blanco, 2014; Setó-Pamies, 2015; Cucari, De Falco, & Orlando, 2018). Nevertheless, most of these works have been dedicated to investigating the impact of such firm characteristics (Reverte, 2009; Muttakin, Khan, & Subramaniam, 2015), board characteristics (Bear et al., 2010; Khan et al., 2013; Frias-Aceituno et al., 2013), and ownership structure (Majeed, Aziz, & Saleem, 2015; Pucheta-Martinez & Lopez-Zamora, 2018), on the level of CSR. However, few research efforts have been addressed the impact of audit committee characteristics on CSR. Among them, Appuhami & Tashakor, (2017), use a sample of 300 Australian listed firms, they investigate the impact of audit committee characteristics on CSR disclosure using multiple regression analysis. Other work conducted by Al-Shaer & Zaman (2018), they use multiple regression analyses to examine the association between AC and credibility of sustainability reports for companies listed on London Stock Exchange. More recently, Buallay & Al-Ajmi (2019), examine the role of AC attributes on the extent of sustainability reporting by using a sample of 59 banks from the Gulf Cooperation Council (GCC).

Furthermore, most of the prior studies in the line of CG and CSR indicate inconclusive results. The plausible explanation of these results is that the overwhelming majority of these studies use symmetric methods (such as regression analysis) to examine hypotheses and they assume that the impact of independent variables on the outcome (dependent

variable) is necessary and sufficient to predict the outcome (Cuadrado-Ballesteros, Martinez-Ferrero, & Garcia-Sanchez, 2017). In this regard, Jain & Jamali (2016) call for using more creative methods; for instance, fuzzy set qualitative comparative analysis (fsQCA) that mix between quantitative and qualitative approach. Further, Paniagua, Rivelles, & Sapena (2018) argue that QCA could resolve the inconclusive results and recognising the complex connections between antecedents. According to Cucari (2019), applying QCA in CG research could be crucial in determining the configurations of attributes that produce a better CG. Several scholarly articles have used fsQCA in CG field. For instance, most of these articles have been dedicated to examining the impact of certain CG characteristics on firm performance (Garcia-Castro, Aguilera, & Arino 2013; Misangyi & Acharya 2014; Pinto & Picoto 2016; Felicio, Rodrigues, & Samagaio, 2016; Paniagua et al., 2018), level of company risk reporting (Carmona, Fuentes, & Ruiz, 2016), and investors' reactions (Campbell & Sirmon, 2016). Besides, the interest of using the QCA method in CG field is increasing; this is shown in the number of high ranked journals that have published articles among recent years (Cucari, 2019). Hence, this result emphasises the increasing awareness toward the relevance of using QCA in CG research.

On the other hand, to the best of our knowledge, only Cuadrado-Ballesteros et al., (2017) and Samara, Jamali, Sierra, & Parada (2018) link between CG characteristics and CSR by using fsQCA. Cuadrado-Ballesteros et al. (2017) use fsQCA to examine the impact of board and firm characteristics on CSR performance for 471 non- financial US companies. They conclude that CSR performance does not depend on particular board characteristics but certain configurations of such characteristics. More recently, Samara et al., (2018) investigate the optimal of CG antecedents (family ownership, family involvement in management, and outside directors) that could affect the level of environmental social performance of family companies within Anglo-Saxon and non-Anglo-Saxon countries.

Other studies apply symmetrical and asymmetrical (fsQCA) approaches (i.e., Khan, Ali, Olya, & Zulqarnain, 2018), they use a CSR as a mediator of the association between transformational leadership and organisational performance.

Therefore, the purpose of this study is to explore the combinations of AC and board characteristics that achieve high levels of CSR disclosure, depending on the complexity theory. This goal is adopted for a sample of the top 69 non-financial European companies (based on market capitalisation) for the period 2016–2018, depending on Eikon database. By using a fuzzy set qualitative comparative analysis (fsQCA), our results suggest that obtaining a high level of ESG score depends on a combination of the net impacts of AC and board characteristics. We also found that AC and board characteristics could impact negatively or positively to a high level of ESG score, depending on the existence or non-existence of other characteristics at the same time. Our results also suggest that there is more than one optimal combination from AC and board characteristics that leads to high levels of ESG score.

By doing that, our study makes different critical contributions in both practical and theoretical sides to the thrifty literature on this remarkable field. ***First***, this study explores different configurations of non-financial firms that lead to the understanding of the joint dependence attributes in AC and board, which cause better CSR disclosure. ***Second***, nevertheless, although the existing CG and CSR literature offers enormous works on board and CSR, the results are mostly contrasting, and there is till now no board consent on the significance of AC characteristics. In that way, this study expands the current argument summarised above by diving deep with a new analytical method (fsQCA) to promote and support the systematic connection between AC and board characteristics with CSR disclosure. ***Third***, the sustainable development concept refers to environmental, social, and governance elements as essential parts, while, some previous

research have focused only on one component. For example, Samara et al. (2018) examined only the environmental performance of the family business. Therefore, our work contributes to CSR literature by investigating the three elements disclosure (CSRD). Finally, our study well-responds to the latest calls offered by Curaci (2019), Cuadrado-Ballesteros et al., (2017), and Jain & Jamali (2016) for using QCA in CSR and CG studies. Thus, this study is expected to be useful not only for researchers but also for regulators, policymakers, and professionals. It offers a new directions and insights for future research by applying new methodological approach (fsQCA) and suggesting new empirical results regarding the impact of AC (size, independence, financial expert, activity, and chair independence) and board characteristics (independence, gender, size, CEO duality, and activity) on CSR disclosure. Our findings also suggest some critical attributes regarding the analysis and development of AC and board guidelines.

This paper is structured as follows: First, an introduction and objective of the study are provided. Second, the literature review. Third, the methodology and data collection method of the study, while the fourth section analyses the result. Finally, the last section provides discussion, conclusions, limitations, and recommendations for future research.

Literature Review

According to Blue Ribbon Committee (BRC) recommendations, the effectiveness of AC affected by different characteristics, such as size, independence, a member with accounting and financial expertise, and meetings (BRC, 1999). Few studies examine the association between CSR and different AC characteristics such as size (Yekini & Jallow, 2012; Jizi et al., 2014; Alotaibi & Hussainey, 2016; Appuhami & Tashakor, 2017; Al-Shaer & Zaman, 2018; Buallay & Al-Ajmi, 2019,), Independence (Haniffa & Cooke, 2005; Said et al., 2009; Appuhami & Tashakor, 2017; Buallay & Al-Ajmi, 2019),

meetings (Jizi et al. 2014; Appuhami & Tashakor, 2017; Buallay & Al-Ajmi, 2019), members with financial expertise (Jizi et al. 2014; Shaukat, Qiu, & Trojanowski, 2016; Appuhami & Tashakor, 2017; Buallay & Al-Ajmi, 2019), and chair independence (Appuhami and Tashakor, 2017; Ashfaq & Rui, 2019). However, all these studies use symmetrical approach such as regression analysis.

The size of AC is one of the main factors that affect its effectiveness (Jizi et al., 2014). As agency theory suggests, larger AC might be more effective (Jensen, 1993). Larger size of AC leads to a diversity of knowledge and experiences, which leads to better controlling of CSR disclosure (Bedard, Chtourou, & Courteau, 2004; Appuhami & Tashakor, 2017). Moreover, smaller AC may not have adequate resources (Alotaibi & Hussainey, 2016). Thus, the quality of monitoring and supervision functions would be lower. Yekini and Jallow (2012) have also concluded that companies with four AC members or more are more likely to disclose high-quality CSR information on their annual reports. According to the Blue-Ribbon Committee (BRC), AC should consist of at least three members (Abbott, Parker & Peters, 2004) and should not exceed six members (National Association of Corporate Directors (NACD), 2000). Different Scholars investigate the effect of AC size on CSR, for instance, Alotaibi & Hussainey, (2016), using a sample of 171 of non-financial Saudi listed companies, found a significant positive relationship between AC size and the quantity of CSR disclosure, however, they indicate an insignificant relationship with quality of CSR disclosure. Yekini & Jallow (2012) also reported a positive association between the size of AC and corporate community involvement disclosure. Buallay & Al-Ajmi (2019) support the previous results and they indicate a significant positive association between AC size and the level of banks sustainability reporting in the Gulf Cooperation Council.

Moreover, Appuhami & Tashakor (2017) found a significant positive association between AC size and the level of CSR disclosure. Katmon, Mohamad, Norwani, & Al Farooque, (2019), using a sample of 200 Malaysian listed companies, report that companies with more AC members will have a higher CSR disclosure quality, as they could help management in providing high-quality information. In contrast, Jizi et al. (2014) use a sample of 107 large US commercial banks, and they find an insignificant relationship between AC size and CSR disclosure. Al-Shaer & Zaman (2018) use a sample of companies listed on London Stocks Exchange, and they find an insignificant association between Ac size and the credibility of sustainability reporting.

The most commonly used definition of AC independent is the percentage of outside directors on the AC (Beasley, 1996; Klein, 2002). Several suggestions were issued by the BRC to develop the effectiveness of ACs. It recommended that ACs of listed firms control and monitor all economic relations between the management and external auditor and that ACs stay fully independent of management (BRC, 1999). Based on BRC recommendations, ACs with independent members could better evaluate the management actions, internal control, and disclosure practices objectively (Abbott et al., 2004). AC independent members could reduce agency problem, information asymmetry, and the possibility of collusion by management by monitoring management practices effectively, thus, improve CSR reporting (Fama, 1980; Fama & Jensen, 1983). Companies with independent AC are less likely to face internal control problems (Yang & Krishnan, 2005). Abbott et al. (2004) state that there is a significant negative association between AC independence and the occurrence of restatements. Anderson, Mansi, & Reeb (2004) report that ACs with fully independent members are significantly associated with a lower cost of debt. Other studies conclude that ACs with independent members could reduce earning management (Klein, 2002; Bedard et al., 2004; Kang, Kilgore, & Wright, 2011).

However, previous studies have mainly focused on whether AC independence improved it is effectiveness, and they ignore how much the percentage is enough (Bronson, Carcello, Hollingsworth, & Neal, 2009). Sarbanes-Oxley Act of 2002 (SOX) obligates all listed companies to have a fully independent AC members. Bronson et al. (2009) support SOX requirement, and they indicate that the benefits from AC independence would accomplish only when the AC is fully independent. However, DeFond and Francis (2005) suggest that the existence of some insiders in AC could be useful because they would have vital specific knowledge and experience about the company. Few studies explore the connection between CSR and AC independence. Al-Shaer & Zaman (2018) indicate that AC independence increases the credibility of a sustainability report. Mangena and Tauringana (2007) report a significant positive relationship between AC independence and the level of voluntary disclosure. Said et al., (2009), Appuhami and Tashakor (2017), and Buallay & Al-Ajmi (2019) support these results, and they find a significant positive relationship between AC independence and the level of CSR disclosure. In contrast, Haniffa & Cooke (2005) use a sample of 139 Malaysian companies, and they find a significant negative association between AC independence and CSR disclosure. However, Katmon et al., (2019) find an insignificant association between AC independence and the quality of CSR disclosure.

Previous literature uses the frequency of AC meetings as a measurement of AC activity and diligence (Sharma, Naiker, & Lee, 2009; Yin, Gao, Li, & Lv, 2012; Appuhami & Tashakor, 2017). The AC meetings frequency implies the number of meetings held by AC during the financial year since more AC meetings indicate high activity levels (Kalbers & Fogarty, 1993). BRC state that there is a positive association between the frequency of AC meetings and better-governed company (DeFond & Francis, 2005). The number of AC meetings is recommended in different CG codes and is used as a proxy by

auditing companies to measure the effectiveness of AC (Yin et al., 2012). For instance, BRC (1999) suggest at least four meetings each year, KMPG (1999) recommends three and four meetings, and PWC (1993) proposes at least four meetings. Abbott et al. (2004) find a positive association between the frequency of AC meetings and a lower rate of fraud. Karamanou and Vafeas (2005) claim that high frequency of AC meetings would improve the responsibilities related to monitoring, supervision, and reporting, thus enhance monitoring performance. AC with more frequency of meetings would have more experiences and knowledge related to accounting, auditing, and CSR (Abbott et al., 2004). Karamanou & Vefeas (2005) find a significant positive relationship between AC meetings and the reported earnings quality. Several empirical studies examine the association between AC meetings and disclosure. Kelton & Yang (2008) conclude that the high frequency of AC meetings would improve internet financial disclosure. Kent and Stewart's (2008) and Allegrini & Greco (2011) find a significant positive relationship between the AC meetings frequency and the level of voluntary disclosure. Al-Shaer & Zaman (2018) suggest a positive relationship between AC meetings and the credibility of sustainability report. Jizi et al. (2014), Appuhami & Tashakor (2017), and Buallay & Al-Ajmi (2019) support these results, and they find a significant positive relationship between AC meetings and CSR disclosure. However, Othman, Ishak, Mohd Arif, & Abdul Aris, (2014), among others, use a sample of top 94 Malaysian companies, and they find an insignificant relationship between frequency of AC meetings and the level of voluntary ethics disclosure.

AC financial expert implies the degree of accounting and financial knowledge and experiences in the AC members. One of the main requirements of different CG codes (for example, Financial Reporting Council, 2003 in UK and SOX, 2002 in U.S) regarding AC

is to consists of at least one member with relevant accounting and financial expertise. The primary responsibilities of AC are supervising the integrity of companies' financial reporting and to oversight risk management and internal control system (SOX, 2002). An active audit committee needs a financial expert member to understand different financial and reporting issues (Abbott et al., 2004). Besides, AC members without relevant financial and accounting knowledge are less likely to deal with reporting problems (Agrawal & Chadha 2005). The presence of ACs combined with financial expertise could lead to clarifies issues that would challenge the managers and external auditor to a better extent of financial disclosure, thus, improving the transparency of corporate disclosure which would avoid agency costs associated with information flow (Bedard & Gendron, 2010). Moreover, the financial experience of audit committee members may attract human resources, which may lead to better sustainability reporting (Helfaya & Moussa, 2017). AC with financial expertise could also enhance and determine the level of CSRD using their capital market knowledge (Appuhami & Tashakor, 2017).

Kelton & Yang (2008) suggest that AC financial experts would enhance internet financial disclosure. Different studies (Be´dard et al. 2004; Karamanou & Vafeas 2005) on voluntary disclosure and disclosure quality indicate a significant positive relationship between AC with financial expert members and reliability of corporate disclosure. Jizi et al. (2014) support their results using a sample of U.S banks, and they find a significant positive relationship between AC with financial expert and CSR disclosure. Shaukat et al. (2016) indicate that ACs with financial expert members are associated with a more comprehensive CSR strategy and higher social and environmental performance. However, Appuhami & Tashakor (2017) find an insignificant relationship between AC financial expert and CSR disclosure. In contrast, Buallay & Al-Ajmi (2019) reveal that AC financial expert affects the level of banks sustainability reporting negatively. They

argued that the existence of financial expert on the Ac is not essentially implying efficient monitoring, while it depends on other factors such as top management authority.

AC chair is the most critical person on the AC composition, and the success of AC primarily depends on the effectiveness of it is chair. Because he is responsible for setting the agenda, making the most for AC meetings, aligning AC coordinating activities with board of directors and different companies' committees, setting clear expectations for external and internal auditors, and highlight continuous enhancement for the AC (KMPG, 2018). According to UK and Australian CG codes, companies should separate between chair of the board and AC chair (FRC, 2018; ASX, 2019). It is suggested that independent AC would have enough time, ability, and librety to make independent decisions and to give useful suggestions (Karamanou & Vafeas, 2005) that could enhance disclosures of the company, including CSRD (Appuhami & Tashakor, 2017). Garcia-Sanchez, Frias-Aceituno, & Garcia-Rubio, (2012) argue that the separation between AC chair and board chair could likewise encourage the members of AC to improve monitoring actions, CG practices and therefore improve the level of disclosures such as CSR. Few studies examine the impact of AC chair independence on CSR. For instance, Ashfaq & Rui (2019) use a sample of the top 120 companies listed on Pakistan Stock Exchange, and they find a significant positive relationship between AC chair independence and the level of CSR disclosure. In contrast, Appuhami & Tashakor (2017) find an insignificant association between AC chair independence and the level of CSR disclosure.

Fama & Jensen (1983) argue that board independence would enhance the controlling and monitoring of the management's behaviour. An agency view suggest that board independence is more capable of meeting stakeholders interests (Zahra & Stanton, 1988) as they do not have concerns about their positions in the company (Khan et al., 2013); thus, the existence of an independent board would lead to more information disclosure,

fewer information asymmetries and better corporation image (Fama & Jensen, 1983). Cucari et al., (2018) report a significant positive association between board independence and ESG disclosure. Board genders diversity is one of the most board characteristics studied by researchers. The participation of women on the board gives a broader experience and knowledge, which improves the decision-making process (Barako & Brown, 2008). Huse and Solberg (2006) claimed that female directors are more interested in board meetings than men, they also have superior attendance registration, and they are more likely to enroll in supervising committees. Therefore, they would provide the right decision and have a high impact on the input and output of the board (Adam & Ferriera, 2009). Furthermore, females are more sensitive about society, environment, and ethics (Hafsi & Turgut, 2013), and they pay more attention to charitable and philanthropic activities (Angelidis & Ibrahim, 2011). Setó-Pamies (2015) conclude that women talent could play a strategic position in enabling companies to dominate their environmental and social practices properly. Thus the existence of women on the board would enhance the level of CSR (Ferrero-Ferrero, Fernández-Izquierdo, & Muñoz-Torres, 2015; Kassinis et al., 2016).

According to Liao, Lin, & Zhang (2018), board size affects the role of controlling and monitoring. Adam, Almeida, & Ferreira (2005) argued that larger boards would have a variety of knowledge and experiences, which enhances the board's ability to supervise and control the company`s disclosures. It is suggested that CEO duality leads to concentration of decision making and control; this, in turn, would lead to compromising the governance performance function (Haniffa & Cooke, 2002); this consequently reduces the disclosure policy, including CSR (Li, Fetscherin, Alon, Lattemann, & Yeh, 2010). Jizi et al. (2014) point out that companies with active board would be more interested in providing information regarding CSR.

Complexity Theory

Consistent with Cuadrado-Ballesteros et al. (2017), we build our study based on the complexity theory tenants. This theory emphasizes four tenets (***equifinality, complexity, asymmetry, and causal asymmetry***) in the study of antecedent conditions that affect a particular outcome (Ragin, 2008). In ***equifinality***, the final stage could be reached with more than one optimal path, as various paths could result in the same outcome (Fiss, 2007). The ***complexity*** tenet indicates that different circumstances would affect the individual antecedent of a particular outcome (Urry, 2005). Woodside (2013) pointed out that the same ingredients could produce the same recipe; therefore, variables could affect a particular result either positively or negatively, relying on the existence or nonexistence of other variables at the same time. The ***causal asymmetry*** tenet suggests that combinations related to high outcomes are not the mirror opposite of combinations related to low ones (Ragin, 2008).

According to Woodside (2014), the complex antecedent configurations can show that the high value of X condition is an indicator of the high value of Y (outcome) when the high value of X joins with particular other antecedent condition (for example, high L, low M, and low N). Besides, the low value of X is an indicator of the high Y (outcome) also when the low X joins in other recipes (e.g., low L, low R, and high S), where L, M, N, R, and S are additional antecedent variables. Finally, ***asymmetry*** tenet suggests that there is an asymmetrical association between variables; therefore, a particular variable could contribute to high levels or low levels of a particular outcome. The contrarian cases will happen as a result, which in turn represents the contrary associations presented by regression models (Woodside, 2013).

Previous studies indicate inconclusive results related to the impact of AC and board characteristics on CSR. The plausible explanation of these results is that the most of these

studies use symmetric methods (such as regression analysis) to examine hypotheses and they assume that the impacts of independent variables on the outcome (dependent variable) are necessary and enough to predict the outcome (Cuadrado-Ballesteros et al., 2017).

The decisions related to the CSR rely on several combinations of such AC and board attributes, but not in one AC or board characteristics (e.g., gender diversity, size, independence, meetings, experience …etc), and there is more than one optimal attributes combination to achieve a higher level of CSR.

This study aims to identify which of the AC and board characteristics configurations are predicting a high level of CSR disclosure (ESG score). Consistent with Cuadrado-Ballesteros et al., (2017) and based on complexity theory (specifically ***equifinality*** and ***complexity*** tents), we suggest the following propositions:

Proposition 1: Different configurations of AC and board characteristics indicate a high level of ESG score ***(equifinality)***.

Proposition 2: The impact of individual AC or board characteristics on a high level of ESG score depends on other AC or board characteristics (***complexity)***.

Methodology

Sample and Data

We use an initial sample of the top 100 European companies based on market capitalization for the period 2016–2018. After eliminating the missing data values and in line with previous studies such as Cuadrado-Ballesteros et al., (2017) and La Porta, Lopez-de-Silanes, & Shleifer, (2002), we exclude financial companies, because of the variety of their equity characteristics, and the lack of comparability with non-financial companies, thus, the final sample consists of 69 companies (207 observations). As shown

from table (1), the companies in the sample are from different 12 European countries (France, UK, Germany, Switzerland, Netherlands, Spain, Italy, Sweden, Denmark, Finland, Norway, and Belgium) and operate in several activity sectors, depending on the classification provided by Thomson Reuters Eikon database (TRBC Economic Sector). This comprises explicitly companies engaged in the sectors of Consumer Cyclicals, Consumer Non-Cyclicals, Industrials, Healthcare, Basic Materials, Utilities, Energy, and Telecommunications Services (see table 1). To achieve study objectives, we collect the available data related to ESG score data, AC characteristics (independence, and financial expert), and boar characteristics from Thomson Reuters Eikon database. While, other AC characteristics (size, meetings, and chair independence) were collected from companies' annual reports.

--Insert Table 1 here--

Our final sample includes the top 69 non-financial European companies based on market capitalizations. Table (2) indicates that most of these companies (around 81%) are with market capitalizations from 25-100 billion, while only 13 companies with more than 100 billion.

--Insert Table 2 here--

Variables

We use ESG score as a proxy to measure CSR disclosure. ESG score is collected from Thomson Reuters Eikon database, which is commonly used in the literature (Gallego-Alvarez, 2018). Eikon database measures companies' ESG performance based on publicly reported data. It also includes 178 items from three pillars (environmental, social, and governance). The first pillar is ***environmental***, and it consists of 61 items distributed as follows: 19 items for resource use, 22 related to emissions, and 20 for innovation. *Resource use* measures the ability of the company to manage the use of materials, energy,

and water and to use effective supply chain management to apply eco-efficient solutions. The *emissions* score measures the adherence and actions of the company to avoid the environmental emissions that result from the production process. While *innovation* score measures the ability of the company to create new market opportunities by developing eco-designed products and new environmental technologies. The ***social*** pillar includes 63 items, and it is allocated into four categories: 29 items for the workforce, eight related to human rights, 14 items for community involvement, and 12 items related to product responsibility. *Workforce* score reflects the company's actions towards job satisfaction and creating diversity and equal opportunities for its workforce to assure its commitment to creating a safe and healthy workplace. *The human rights* Score reflects the company's adherence to the human rights fundamental. *Community* score means the company's adherence to be a good citizen and to protect the public health and to act ethically. *Product responsibility* score means the capacity to make quality products or services, taking into consideration the health and safety of the customers, integrity, and honesty, and data privacy. Finally, 54 items used to measure the ***governance*** pillar, and it includes 34,12,8 items related to management, shareholders, and CSR strategy, respectively. *Management* score reflects the company's adherence and efficacy towards using the best corporate governance practices. *Shareholders'* score measures the company's actions to assure the equal treatment of shareholders and the use of requisition tools. *CSR strategy* score measures the company's adherence to use and integrate the economic, social, and environmental dimensions in its daily decision.

AC characteristics are selected depending on prior CG and CSR studies, which have evidence impacts of independence, size, meetings, financial expert, and chair independence on CSR (Jizi et al., 2014; Appuhami & Tashakor, 2017; Al-Shaer & Zaman, 2018). AC independence (***ACIND***) represents the percentage of independent board

members on the AC; AC size (***ACSIZ***) refers to the total number of AC members at the end of the fiscal year; AC meeting (***ACMEE***) refers to the number of AC meetings during the year. AC financial expert (***ACFEX***) measured as a dummy variable, which equals one if the company has an AC with at least one "financial expert" within the meaning of Sarbanes-Oxley or zero otherwise. While AC chair independence (***ACCHI***) measured as a dummy variable, and it takes the value one if the AC chair simultaneously chairs the board or any other executive position or zero otherwise.

Board characteristics have also been chosen as the highly significant attributes that could influence not only CSR disclosure but also, they would associate with AC attributes, resulting in various board decisions. According to Al-Najjar (2011), AC independence and activity affected by board characteristics such as board size and independence. Board size, independence, gender, meetings, and CEO duality are the most widely used characteristics to investigate the associations between board and CSR. Board size ***(BOSIZ)*** refers to the total number of board members at the end of the fiscal year. Most of the previous literature measure board independence ***(BOIND)*** as a percentage of independent board members. Gender diversity ***(GEDIV)*** represents the percentage of females on the board. While, board meeting ***(BOMEE)*** refers to the number of board meetings during the year, and CEO duality ***(CEODU)*** is usually represented as a dummy variable which equals one if the CEO simultaneously chair the board, or zero otherwise.

Fuzzy set /Qualitative Comparative Analysis (FsQCA)

Multiple regression analysis is one of the most commonly used methods by previous literature; however, a symmetric method indicates the net impacts of some independent variables on the dependent variable (outcome), while holding other variables constant depending on other independent variables. According to Ragin (2000, 2008), traditional

statistical methods such as regression propose that the impacts found are necessary and enough to predict the outcome, while most of the actual relationships are asymmetrical. Besides, multiple regression analysis aims to determine the significant positive or negative impact of the only particular independent variable on the outcome (dependent variable), not a combination of other variables (Woodside, 2013). Thus, to avoid traditional statistical methods problems, and depending on complexity theory, we use Fuzzy set qualitative comparative analysis (fsQCA), which is one of the set-theoretic methods suggested by Ragin (1987,2000,2008). This method used for complex configurational analysis; it also combines qualitative and quantitative analysis techniques. Besides, Fiss (2007) points out that this method determined configurations that are necessary variables (conditions) to achieve a specific level of the dependent variable (outcome) by using Boolean algebra rules. To achieve our study objectives, we adopt two propositions (***equifinality***, and ***complexity***) using FsQCA to identify the different configurations of AC and board characteristics that indicate the sufficient variables (conditions) for achieving a high level of CSR disclosure (ESG score).

When performing the fsQCA method, the first stage is mandatory, which is transforming the variables into calibrated groups (Woodside, 2013). Calibration is transforming the original data into an analogous z-scale. It is a way to express the degree of set membership, which requires the use of three breakpoints: full membership (value of 1), full non-membership (value of 0), and cross-over point where the case is neither in nor out of the set (value of 0.5). We analyze our data using R version 3.6.1 (QCA package version 3.5) (Dusa, 2019). Some authors (such as Carmona et al., 2016) used the following percentile approach: 20%, 50%, and 80% provided the breakpoints for full non-membership, the cross-over point, and full membership, respectively. While in our study, we calibrated our variable automatically (determine full membership and full

nonmembership using clusters “Euclidian Distance”) by using R Software (QCA package). Depending on the function (*FindTh*), we determine the three cut-off points for calibration; the aim of this function is to find automatically the calibration thresholds for a numerical of casual conditions to be divided into separate parties. *FindTh* uses a cluster analysis to find out which threshold value best separate the points into a specific number of groups, separating raw data into the most meaningful groups (Dusa, 2019). For dummy variables, a value of (1) is given to indicate being fully in the set and value of zero (0) when entirely out of it.

After the coding, all possible combinations of variables will be listed with their degree of consistency in a 'truth table' that is created by the fsQCA method. It is essential to assess which combination might be sufficient conditions for the outcome. Coverage and consistency are helpful metrics that are alike to a symmetric test of correlations and coefficient of determinations (Hsu, Woodside, & Marshall, 2013). The consistency test measures the degree of which the cases are members of the conditions and the outcome of their overall membership in the conditions. Regarding sufficiency coverage, we investigate to what degree cases are members of the conditions and the outcome about their overall membership in the outcome. Thus, if sufficiency consistency is high enough, the evidence is consistent with the hypothesis that the conditions are sufficient for the outcome (Dusa & Alrik, 2013). The intuition behind is that consistency scores are similar to a Pearson’s *r* coefficient in statistical analysis, and coverage is similar to the coefficient of determination, *r2*, in statistical analysis (Hsu et al., 2013). Table (5) shows the Results of sufficient conditions and their consistency and coverage indexes. According to Woodside (2013), the fsQCA model is useful when the coverage range is between 0.23-0.65, and we have obtained 0.80 as the minimum value of consistency

Results

Correlation and Descriptive Statistics

Table (3) shows the results of the correlation matrix for all variables. Various of AC and board attributes are correlated statistically. This possibly will result in multicollinearity problems in the analysis of regression, while all are less than 0.5 (excluding the correlation between AC independence (**ACIND**) and board independence (**BOIND**) with a value of 0.69), which is under the essential level, i.e., 0.8, (Greene, 1999.). According to Wu et al. (2014), this result implies that every factor measures a unique and independent attribute.

--Insert Table 3 here--

Table (4) shows descriptive statistics of all variables for the period 2016-2018. We can notice that the mean value of ESG score is almost 77%, in a range between 43% and 95%. This suggests that, in general, the level of ESG score is quite high. This might be because our sample consists of the top European companies, and most of the previous studies reported a significant association between company size and the level of CSR. Regarding AC characteristics, the mean values in Table (4) show that there are 4.42 AC members on average (**ACSIZ**), of which almost 85% tend to be independent AC members (**ACIND**), and they tend to meet around six times a year (**ACMEE**). Besides, 85% of our samples have at least one financial expert member on their AC (**ACFEX**), and around 94% of these companies have an independent AC chair (**ACCHI**). Concerning board characteristics, the descriptive results in Table (4) also show that there are almost 14 directors (**BOSIZ**), of which almost 67% tend to be independent board members (**BOIND**), and about 33% are female members (**GEDIV**). Board members tend to meet eight or nine times each year (**BOMEE**). Besides, 35% of our sampled companies do not separate between the chair of the board and CEO (**CEODU**).

--Insert Table 4 here--

AC and Board Characteristics Predicting High ESG Score

Table (5) shows the combinations of AC and board characteristics predicting a high level of ESG score for the period 2016-2018, and for each year independently (2016, 2017, and 2018.

--Insert Table 5 here--

Table (5) shows the configurations of AC and board characteristics that obtain a high level of ESG score (three for 2016-2018, four for 2016, two for 2017, and one for 2018). These configurations are sufficient conditions for high levels of ESG score, although none is enough since several configurations achieve high levels of ESG score. As shown from Table (5), for each period, different configurations indicate a high total consistency (more than 0.9) and a sensible total coverage (0.541 for 2016-2018, 0.471 for 2016, 0.229 for 2017 and 0.448 for 2o18). In each configuration, we can notice that variables with (Upper-case letters) contribute positively, and variables with (Lower-case letters) contribute negatively to high levels of ESG score. For example, the first combination for predictions in the period 2016-2018 (ACIND*acsiz*BOIND*ACFEX*ACCHI*ceodu) indicates that some companies with high percentage of independent AC members(**ACIND**), lower AC size(**acsiz**), included in their ACs at least one member with accounting and financial expertise (**ACFEX**), have AC chair independent (**ACCHI**), in which there is a high percentage of independent directors (**BOIND**) and separate between CEO and the chairman of the board (**ceodu**), will have a high level of ESG score. This configuration indicates a high consistency index of 0.941 and a unique coverage index of 0.301.

Generally, the impacts of individual characteristics are not always positive or negative or always present (except for ACIND, BOIND, ACFEX, and ACCHI); such as, the AC meetings variable appears in six of ten total configurations in Table 5, and in some, it contribute positively (ACMEE), whereas in others, it impacts negatively (acmee). This

result means that one specific AC or board characteristic may affect negatively or positively or have no effect on the level of ESG score, in contrast to the generalized results of prior studies. In our case, we have four variables (ACIND, BOIND, ACFEX, and ACCHI) that appear in all configurations (ten times) and contribute positively to the high levels of ESG score. This indicates that the independence of board and AC member, AC with at least one member with accounting and financial expertise and separation between AC chair and board chair or any other executive positions are necessary conditions to achieve high levels of ESG score. However, it is not enough, because a variable may not lead to the outcome unless a combination of other variables exists. Moreover, in the absence of ACIND, BOIND, ACFEX, and ACCHI, a high level of ESG score cannot be obtained. Certain conclusions can be drawn: no single AC or board characteristic reveals high levels of ESG score since findings reveal complex antecedent conditions; the impact of an individual AC or board characteristic depends on other primary AC or board characteristics. These findings are consistent with Cuadrado-Ballesteros et al., (2017) and support ***equifinality*** and ***complexity*** tenets, according to our propositions 1 and 2. Lastly, we can notice differences between the years. Configurations obtained in Table 5 are different, depending on the year of analysis. Regarding other variables, **ceodu** appears in eight of ten total configurations, and **acisz** also appears in seven of ten configurations, both variables contribute negatively to the high level of ESG score. While gender diversity (**GEDIV**) appears in three configurations, and it positively affects the high level of ESG score. However, board meeting (**bomee**) and board size (**BOSIZ**) appear only in one configuration, **bomee** contribute negatively, and **BOSIZ** contribute positively to the high level of ESG score.

Robustness analysis for sufficiency

In fuzzy sets, a condition or a causal configuration might be in concurrence for both the outcome and its negation in an unreasonable relationship. This should be taken into consideration because some instances underline a situation where a variable could be sufficient for the outcome and its negation. Thus, it is crucial to perform the algorithm for the negation of the outcome (Dusa & Alrik, 2013). The results show that the three casual configurations do not have a high enough consistency score for the negation of the outcome (ESG score); thus, the paradoxical relationship is not confirmed (Table 6). On the other hand, the association of sufficiency between a casual configuration and the outcome may be as robust as the association of sufficiency among the negation of the casual configuration and the outcome, which will create a problem (Dusa & Alrik, 2013). Our results do not confirm the sufficiency association for the negation of the causal variables (Table 7). Thus, the scores of the negation of the variable's combination are low enough to confirm this contradiction.

--Insert Table 6 here--

--Insert Table 7 here--

Discussion

Our results suggest that obtaining a high level of ESG score relies on a combination of the impacts of AC and board characteristics. We also found that AC and board characteristics could impact negatively or positively to a high level of ESG score, depending on the existence or non-existence of other characteristics simultaneously. Our empirical results suggest that there is more than one optimal combination form AC and board characteristics that leads to high levels of ESG score. In line with previous studies, our findings reveal that AC independence, board independence, AC financial expert, and AC chair independence are sufficient characteristics predicting a high level of ESG score. For instance, Said et al. (2009) and Appuhami & Tashakor (2017) conclude that AC

independence enhances the level of CSR disclosure. Ashfaq & Rui (2019) reveal a significant association between AC chair independence and CSR disclosure. AC financial expert improves CSR performance (Shaukat et al. 2016), and the level of CSR disclosure (Jizi et al., 2014). However, the final impact also depends on other characteristics, such as gender, size, and meetings. Although board independence paly a critical role in supervising management (Fernández-Gago, Cabeza-García, & Nieto, 2018), thus, improves the level of CSR disclosure (Khan et al.,2013; Garcia-Sanchez, & Martinez-Ferrero, 2017). and increases companies' community involvement (Wang & Coffey, 1992), therefore, adding more independent directors will enhance the level of ESG score. However, the independent director has more characteristics than his/her independence; for example, the imapct would be different if the independent member is male or female, younger or older, in a small or large board, and active or less active board. The plausible explanation is that according to Ragin (2008), different combinations of causal factors could achieve the same outcome (ESG score).

Concerning other configurations of AC and board characteristics, CEO duality, and AC size are also important. In line with our findings, previous studies indicate that CEO duality contributes negatively to CSR reporting (Muttakin and Subramaniam, 2015; Lattemann, Fetscherin, Alon, Li, & Schneider, 2009). However, in contrast with previous literature (Appuhami & Tashakor 2017; Katmon et al. 2019), we found that AC size contributes negatively to the level of ESG score. The plausible explanation is that all companies in our sample comply with BRC recommendations, and they have a minimum of three AC members (see Table 4). On the other hand, we find that AC meetings contribute negatively to ESG score and positively in others. High frequency of AC could be more active (Jizi et al., 2014), but more meetings could negatively affect the level of CSR disclosure (Pucheta-Martinez & Chiva-Ortells, 2018). Finally, Board gender

diversity is one of the most common variables studied by researchers. Consistent with our results, most authors indicate that board gender diversity positively impacts CSR performance (Bear et al., 2010; Byron & Post, 2016; Cuadrado-Ballesteros et al., 2017; Yasser, Al Mamun, & Ahmed, 2017) and CSR disclosure (Fernandez-Feijoo et al., 2014; Dah & Jizi, 2018). However, women directors have other essential characteristics, for instance, independence, age, experience. Obtaining a high level of CSR disclosure is not as easy as improving one individual AC or board characteristics; it depends on other attributes, such as we mentioned earlier, and all of them would be considered to affect the level of ESG score.

Conclusion

CSR disclosure is a complex phenomenon influenced by different combinations of AC and board attributes, consistent to Cuadrado-Ballesteros et al., (2017), we apply a new framework depending on the complexity theory. Its central argument is that various combinations of casual's factors affect the same level of specific outcome (Ragin, 2008). The data were collected from Eikon database for the top 69 non-financial European companies (based on market capitalization). By using fsQCA, our results support the key two tenets of complexity theory. *First*, different configurations of AC and board characteristics indicate a high level of ESG score (***equifinality tenet***); *second*, the impact of individual AC or board characteristics on a high level of ESG score depends on other initial AC or board characteristics (***complexity tenet***). These results have useful practical and theoretical implications, mainly for regulatory parties. First, our study underlines the impact of AC and boards on CSR reporting, AC independence, AC financial expert, AC chair independence, and board independence are essential characteristics of the AC and board's contribution to the CSR disclosure, even though separately they are not important. According to our findings, AC independence, board independence, AC financial expert,

AC chair independence, gender diversity independence, gender diversity, affect CSR disclosure positively (Said et al. 2009; Jizi et al.,2014; Appuhami & Tashakor 2017). While CEO duality and AC size contribute negatively to CSR disclosure (Haniffa & Cooke, 2002), but this impact is not enough because the variable alone does not achieve the outcome; it relies on a combination of other variables.

Our results are relevant to regulators, professionals, and policymakers in establishing and revising the guidelines linked to the composition of AC and board of directors. For instance, CEO duality is one of the main factors that contribute negatively to the high level of CSR disclosure; however, 35 % of our sample do not separate between the CEO and chairman of the board. On the other hand, it will be useful to revise AC composition; for example, our results reveal that high levels of CSR disclosure are achieved with a low number of AC members, together with other AC and board attributes.

This study also makes a significant contribution to board and CSR field. It uses a new methodology that mix between qualitative and quantitative approaches. To the best of our knowledge, this the first study that applies a configurational analysis approach (FsQCA) on the impact of AC and board characteristics on CSR disclosure.

This approach is still underused in business and management research, which could be surprising because usually, life events and associations are mostly asymmetrical (Ragin, 2008). According to Woodside (2013), reality includes a variety of combinations of attributes to explain one particular outcome, which indicates the presence of asymmetrical associations instead of symmetric ones. Thus, our results recommend researchers to study the board characteristics associated with corporate governance using a QCA methodology.

However, our study also has its limitations. First, the limited number of factors could be considered when using QCA since the number of combinations grows exponentially, which in turn reduces the correct reasoning. Moreover, the degrees of membership in the calibration depends on the degree of the researchers' subjectivity. Finally, there should be a variety of cases since limited numbers of cases may not include examples of every potential combination, and thus, the analysis would be limited to cases characteristics.

On the other hand, despite the previous limitations, QCA provides considerable insights over the ones obtained from common methods, particularly regression analyses (Woodside, 2013). Besides, it could be more attractive for future research to examine other CG characteristics that may affect the association between AC, board, and CSR disclosure, such as board ownership, board age, the role of auditor, board educational diversity, and board interlock. Future research could also repeat the study on different CSR measures, such as credibility of sustainability reporting, and disaggregate the CSR disclosure (ESG score) into three measures (governance, social and environmental), also in different institutional frameworks, by expanding the sample or use different countries.

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Table (1): Sample Description

Country	Number	%	TRBC Economic Sector Name	Number	%

France	18	26.1%	Consumer Cyclicals	14	20.3%
UK	17	24.6%	Consumer Non-Cyclicals	13	18.8%
Germany	11	15.9%	Industrials	11	15.9%
Switzerland	6	8.7%	Healthcare	8	11.6%
Netherlands	3	4.3%	Basic Materials	7	10.1%
Spain	3	4.3%	Utilities	6	8.7%
Italy	3	4.3%	Energy	6	8.7%
Sweden	3	4.3%	Telecommunications Services	4	5.8%
Denmark	2	2.9%			
Finland	1	1.4%			
Norway	1	1.4%			
Belgium	1	1.4%			
Total	69	100.0%		69	100.0%

Table (2): Sample according to Market Capitalization

Market Capitalization (Billion)	Number	%
25 -50	31	44.9%
50- 100	25	36.2%
100-200	10	14.5%
more than 200	3	4.3%
	69	100.0%

Table (3): Correlation Matrix

	Variables	1	2	3	4	5	6	7	8	9	10	11
1	**ESGS**	1										
2	**ACIND**	0.44	1									
3	**ACSIZ**	0.00	-0.25	1								
4	**ACMEE**	0.07	-0.05	-0.17	1							
5	**ACFEX**	0.04	0.15	0.04	0.00	1						
6	**ACCHI**	0.15	0.46	-0.13	0.13	0.17	1					
7	**BOSIZ**	-0.22	-0.38	0.42	0.10	0.00	-0.18	1				
8	**BOIND**	0.55	0.69	-0.23	0.11	0.06	0.38	-0.23	1			
9	**GEDIV**	0.13	-0.04	0.03	-0.15	-0.24	-0.15	-0.06	-0.15	1		
10	**CEODU**	-0.19	-0.17	-0.01	0.05	0.08	-0.10	0.27	-0.24	0.22	1	
11	**BOMEE**	0.16	0.00	0.00	0.30	0.03	0.02	-0.10	0.1	0.05	0.09	1

Note: ESGS represent ESG score; ACIND and ACSIZ refer to AC independence and size, respectively; while ACMEE represent the frequency of AC meetings; ACFEX refers to AC financial expert; ACCHI represent AC chair independence; BOSIZ refers to the board size; BOIND represent board independence; GEDIV refers to the percentage of female directors on the board; CEOD represents the CEO duality; and BOMEE refers to the frequency of board meetings.

Table (4) Descriptive Statistics

Variables	Mean	S. D	Min	Max
ESGS	0.77	0.11	0.43	0.95
ACIND	0.85	0.23	0.13	1.00
ACSIZ	4.42	1.16	3.00	8.00
ACMEE	6.05	2.65	2.00	15.00
ACFEX	0.85	0.36	0.00	1.00
ACCHI	0.94	0.25	0.00	1.00
BOSIZ	13.50	3.48	7.00	23.00
BOIND	0.67	0.22	0.05	1.00
GEDIV	0.33	0.11	0.05	0.64
CEODU	0.35	0.48	0.00	1.00
BOMEE	8.80	3.36	3.00	27.00

Note: the variables are defined on Table (3)

Table (5): AC and board characteristics that are predicting a high level of ESG score

	Configuration	Consistency	Coverage
	2016-2018		
1	ACIND*acsiz*BOIND*ACFEX*ACCHI*ceodu	0.941	0.301
2	ACIND*acmee*BOIND*ACFEX*ACCHI*ceodu	0.924	0.408
3	ACIND*acsiz*acmee*BOIND*GEDIV*ACFEX*ACCHI	0.969	0.214
	Solution consistency:0.929		
	Solution coverage:0.541		
	2016		
1	ACIND*acsiz*BOIND*ACFEX*ACCHI*ceodu	0.906	0.285
2	ACIND*acmee*BOIND*ACFEX*ACCHI*ceodu	0.896	0.315
3	ACIND*BOSIZ*BOIND*ACFEX*ACCHI*ceodu	0.987	0.17
4	ACIND*acsiz*ACMEE*BOIND*GEDIV*ACFEX*ACCHI	0.952	0.191
	Solution consistency:0.900		
	Solution coverage:0.471		
	2017		
1	ACIND*acsiz*ACMEE*BOIND*BOMEE*ACFEX*ACCHI*ceodu	0.932	0.133
2	ACIND*acsiz*acmee*BOIND*GEDIV*bomee*ACFEX*ACCHI*ceodu	0.936	0.167
	Solution consistency:0.934		
	Solution coverage:0.229		
	2018		
1	ACIND*acsiz*BOIND*ACFEX*ACCHI*ceodu	0.94	0.448
	Solution consistency:0.940		
	Solution coverage:0.448		

*Note: the variables are defined on Table (3), * represents the logical 'and' condition, Lower-case letters indicate the absence or negation of the condition, and Upper-case letters indicate the presence of the condition.*

Table (6): Analysis of sufficient conditions for the negation of the outcome (ESG score)

Configuration	Consistency	Coverage
ACIND*acsiz*BOIND*ACFEX*ACCHI*ceodu	0.256	0.243
ACIND*acmee*BOIND*ACFEX*ACCHI*ceodu	0.209	0.273
ACIND*acsiz*acmee*BOIND*GEDIV*ACFEX*ACCHI	0.391	0.256

*Note: the variables are defined on Table (3), * represents the logical 'and' condition, Lower-case letters indicate the absence or negation of the condition, and Upper-case letters indicate the presence of the condition.*

Table (7): Analysis of sufficiency for the negation of the causal condition

Configuration	Consistency	Coverage
Negation (ACIND*acsiz*BOIND*ACFEX*ACCHI*ceodu)	0.25	0.002
Negation (ACIND*acmee*BOIND*ACFEX*ACCHI*ceodu)	0.371	0.002
Negation (ACIND*acsiz*acmee*BOIND*GEDIV*ACFEX*ACCHI)	0.378	0.002

*Note: the variables are defined on Table (3), * represents the logical 'and' condition, Lower-case letters indicate the absence or negation of the condition, and Upper-case letters indicate the presence of the condition.*