SAPIENZA UNIVERSITÁ DI ROMA
FACOLTÁ DI ECONOMIA

DIPARTIMENTO DI MANAGEMENT

DOTTORATO DI RICERCA IN

"MANAGEMENT, BANKING AND COMMODITY SCIENCES"
XXVIII CICLO

TESI DI DOTTORATO

LINKING COUNTRY-LEVEL CAUSAL CONDITIONS TO WOMEN ON BOARDS: A SET-THEORETIC APPROACH

MICHELA IANNOTTA

TUTOR: PROF. MAURO GATTI

A.A. 2014/2015

INDEX

This page is intentionally left blank

PREFACE

Understanding the causes of social and economic phenomena is not always easy to do. The words of the Latin poet Virgil suggest that he is "fortunate who was able to know the causes of things". That is, somehow, another way of saying that the full acknowledgement of the causes is a difficult, or almost impossible, process. Such complexity is attributable to the fact that social and economic phenomena usually display a *multiple conjunctural causal* nature: multiple causes may determine an effect, as well as different combinations of causes may lead to the same effect. This form of causal complexity poses a number of challenges to decision-makers, both in business and in policy. However, the adoption of a holistic approach and the use of adequate tools that are able to unpack this composite nature may be very useful for reducing, albeit not solving, the complexity of phenomena under investigation. In doing so, remarkable opportunities arise for research and practice aimed at improving certain outcomes of interest.

With this in mind, the present dissertation delves into the complex causal nature of a phenomenon over-debated in both political and academic arenas: the underrepresentation of women on boards of directors. Lying outside from making a "business case" for women on board, it re-conceptualizes this subject as the outcome of a conjunction of specific institutional antecedents. The guiding idea stems from the importance of acknowledging the existence of institutional interdependencies to design the "right" policies for the promotion of female representation on boards. Starting from such considerations, this work requires a twofold effort in adopting, at first, a *configurational* perspective and, later, a set-theoretic approach to deeply explore the intersections of the causes that result in the lack of women in top corporate positions. The logic of sets and the adoption of a holistic view allow for developing a unique and comprehensive conceptual framework that takes into account the complex relations between "bundles" of causes that influence women's rise to the boardrooms and the enactment of policies and practices that can facilitate such a rise.

Michela Iannotta

INTRODUCTION[*]

The representation of women on the boards of directors has become a prominent issue in both political and academic debates. In the wake of financial scandals and failures of companies (e.g., Enron, WorldCom, Lehman Brothers), many scholars have posed their attention on the importance of board composition, especially with regard to gender diversity on corporate boards (Terjesen, *et al.*, 2009). Despite the last decades have seen a progressive increase of equal opportunities legislations, nowadays workplaces and corporate boards continue to be male-dominated (Grosvold, 2011; Williams, 2000), women are still not equally represented in the boardrooms (Terjesen *et al.*, 2014), and their presence in directorship bodies is actually worse than many surveys can suggest (Adams and Kirchmaier, 2013).

In order to increase the number of women in top corporate positions, several countries have introduced affirmative action policies. Without doubt, since Norway enacted gender quotas on boards, "a snowball started rolling" (Huse and Seierstad, 2014, p. 38) and gender quotas legislation has become *de facto* a socially expected policy to promote the number of women in board positions. In this wake, EU Institutions have asked listed public companies to increase the quota of female representation on boards to 40% within 2020 and some countries have followed the Norwegian example. However, the introduction of gender quotas for boards of directors was not always straightforward, whereas many countries have shown great scepticism and political disagreement towards quotas (such as Germany, Finland, and Denmark). The most common argument used by politicians and academics to support the adoption of gender quotas is the economic utility of gender diversity on boards, in terms of higher and sustainable economic growth, improved firm performance, better decision-making on boards, and better use of the talent pool at hand (European Commission, 2012a). Taken together, these arguments have made a "business case" for female directorship. Although the subject of women on boards holds a profound social nature, debates about gender quotas have especially delved into the business case,

---

[*] The contents of this thesis have been developed into three research papers:
  1) Iannotta, M., Gatti, M., & Huse, M. (2015). Institutional Complementarities and Gender Diversity on Boards: A Configurationally Approach. C*orporate Governance: An International Review*, doi: 10.1111/corg.12140;
  2) Iannotta, M. & Huse, M. (2014), Pregnancy and Women on Boards. How can public policies break the maternal wall? Presented at the *8th Biennial International interdisciplinary Conference of Gender, Work and Organization* –, Keele University, Staffordshire, UK, 24th-26th June 2014; and
  3) Iannotta, M. (2013). Women on boards and Public Policies. Does a connection exist? Presented at the workshop "*Diversity: Women on Boards/Top Management Teams*", University Witten / Herdecke, Germany, 6th-8th December 2013.

neglecting the importance of social justice rationales, which refer instead to principles of equal treatment and non-discrimination, and to the promotion of equality in society. However, the "negative" literature about gender quotas on boards has revealed that such affirmative action policies may cause drops in the stock price, reduce firm value or lead to worse organizational performance (e.g., Ahern and Dittmar, 2012; Bøhren and Staubo, 2014; Matsa and Miller, 2013). This contrasting evidence has led to be sceptical about the economic approach and to question the business case for women on boards. To that regard, some scholars have argued that, before claiming the necessity of gender quotas for boards of directors, it is important to understand the causes underlying female underrepresentation on boards (Adams and Kirchmaier, 2013), and to explore the institutional and historical context where gender quotas should take place (Huse and Seierstad, 2014). Whilst recognizing the importance of importance of existing national configurations for the introduction of new regulatory policies, surprisingly very few studies have addressed the relationships between institutional antecedents of female underrepresentation on boards and the use of public regulatory policies (e.g., Seierstad *et al*., 2015), leaving usually separated these two streams of research.

On the one hand, the institutional literature on gender diversity on boards has offered a more systematic understanding of the structural barriers to female representation of women on boards (Grosvold and Brammer, 2011). It has revealed that the representation of women on boards is affected primarily by three institutional factors, namely welfare states, labour markets, and national cultures. Moreover, a long tradition of studies in law, management, sociology, and psychology research has systematically shown a close interdependence between these three institutional domains. In other words, multiple interconnections have been found to exist between prescriptive norms about the role of women in society, welfare provision related to childbirth and childcare, and female employment in the labour market. This state of affairs suggests that these institutional sets may show important complementarities between them and they may have synergistic effects on female representation on corporate boards. Despite acknowledging such interrelations is important for designing the "right" measures of intervention to promote female representation on boards (which may include not necessarily mandatory quotas), corporate governance research has completely neglected to investigate the joint influence of such institutions. Consequently, a deepened investigation on why, whether, and which institutional conditions are jointly and causally connected with female representation on boards is still needed.

On the other hand, the institutional literature on gender quotas for boards of directors has documented that the adoption of such affirmative action is linked, somehow, to the existence of critical junctures (Teigen, 2012) and national coherence between institutions (Terjesen *et al*., 2014). Moreover, some scholars have questioned that gender quotas are not sufficient on their own to achieve a higher number of women on boards, but they may require to be integrated or complemented by other interventions, such as work-life balance

policies (Adams and Kirchmaier, 2013; Bergstø, 2013). If these studies suggest a sort of complementarity between gender quotas and national institutions, other research underline their supplementary function in national configurations, since gender quotas may compensate the deficiencies of other institutions to pursue high levels of female representation on boards (e.g., Grosvold and Brammer, 2011).

The relative partition of these two streams of research has prevented to learn more about the function that gender quotas for boards of directors actually have in promoting female representation on boards. Indeed, when a new regulatory policy or institution is enacted into a given national system, it may fail to gain the expected objectives, because synergic effects produced by institutional complementarities might slow down the intended change (in line with Deeg, 2007). Therefore, it is still vague whether gender quotas are necessary or sufficient conditions to pursue a higher level of female representation on boards and what role they play in the existing national institutional systems (i.e., are gender quotas complements or substitutes in relation to the other institutions?).

Therefore, the aim of this thesis is to answer the following research questions:

RQ1: Why and how are certain institutional domains causally and jointly related to women on boards?

RQ2: Are there complementarities between these institutional domains?

RQ3: What type of complementarity is it? Are these institutions synergic or substitutes?

RQ4: Which conditions in each institutional domain are in *conjunctural* causality with the representation of women on boards?

RQ5: Which combinations of country-level conditions lead to a higher number of women on boards?

RQ6: What is the role of gender quotas for boards of directors in the existing national configurations? Are they necessary and/or sufficient conditions to achieve a higher number of women on boards?

In order to answer the alleged research questions, this study adopts a unique and comprehensive conceptual framework that takes into account both the interrelated forces existing between welfare, labour, and cultural institutions in shaping women's rise to corporate board positions, as well as the role of affirmative action policies in supporting such a rise. The aim is to better inform policies and practices aimed to promote gender diversity on boards.

By adopting a multiple theoretical lens, this study theoretically informs and empirically verifies the existence of complementarities between different institutional domains and their joint causal effects on female representation on boards. The core assumption is that the more gender-neutral are cultural, welfare and labour institutions, the higher will be the number of women on boards of directors. The underlying logic is that, the presence of complementarities leads institutions to complement and mutually reinforce their similar

non-gendered structures, thus creating positive synergistic effects on the distribution of opportunities and power in society, and then on the number of women that hold top-management positions. This research draws on institutional complementarities theory to support these arguments and it proposes women on boards as the outcome of a conjunction or combination of certain country-level causal conditions. In doing so, it adopts a set-theoretic approach to study women on boards in terms of causally complex relations. Indeed, referring to the existence of complementarities underlies a causal mechanism between institutions, because complementarities imply that the effect of one institution depends on the presence or absence of another (complementary) institution. Moreover, national institutional conditions can combine in different ways, by generating several national configurations. Analyzing such configurations may result in different conjunctions or combinations of causal conditions (*conjunctural causality*) that can equally lead to a higher number of women on boards of directors (*equifinality*). The corresponding insights may be relevant to assess whether or not there is a superior national model for female representation on boards, as well as to evaluate the role of gender quotas policies within the existing national configurations.

In order to corroborate the alleged theoretical propositions, this work presents a qualitative empirical investigation. More exhaustively, it performs a fuzzy sets/Qualitative Comparative Analysis (fs/QCA) between the 27 EU countries. Considering that exploring complex causal relations essentially means finding necessary and sufficient conditions and their combinations for a given outcome (Schneider and Wagemann, 2012), this research approach allows for the causal interpretation of the phenomenon of gender diversity on boards. To that effect, the adoption of fs/QCA leads to map countries (*cases*) as configurations of institutional attributes (*causal conditions*) and to analyze each causal condition in terms of necessary and/or sufficient condition for the outcome under investigation. In this way, it is possible to explore the alleged existence of institutional complementarities and joint causation in terms of multiple conjunction of country-level causal conditions where the effect of a single condition may unfold only in combination with other conditions, i.e. where single national conditions may be neither necessary nor sufficient to achieve a higher number of women on boards. The corresponding findings reveal the existence of a unique, almost "ideal", configuration of national institutional conditions that is sufficient to achieve a higher number of women on boards. Conversely, gender quotas for boards of directors are found to be neither a necessary nor a sufficient condition for gender diversity on boards. Overall, these results support the alleged existence of institutional complementarities and *conjunctural* causation, but not the occurrence of other *equifinal* pathways that can equally lead to a comparatively higher number of women on boards across EU countries. This is the most notable result for this research, since it provides strong support to the assumption that a more equal division of gender roles within families, labour and cultural institutions can lead to a greater presence of women on boards, more than the single enactment of gender quotas does.

By filling important gaps in extant literature, this work contributes to the corporate governance research in several ways. From a theoretical perspective, it refines and advances previous insights on the institutional view of gender diversity on boards. In detail, it contributes to shed light on the existence of institutional complementarities in shaping female representation on boards, and to assess the actual necessity and sufficiency of board gender quotas. In this way, it also contributes to the controversial and still open debate about the function of gender quotas in the existing national configurations. Furthermore, this research presents important policy implications. By providing meaningful insights on the mix of policies that may be more effective to advance female representation women in board positions, it contributes to better drive the choices of both politicians and practitioner aimed at promoting gender diversity on boards. Overall, this work suggests that a more effective mix of policies to promote gender diversity on boards may go beyond the enactment of gender quotas at board level, and it may require initiatives that deconstruct the presence of gender in many other institutions. Indeed, policy initiatives should take into account that the presence of institutional complementarities contributes to enhance their stability over time and introducing a new regulatory policy in a set of stable and mutually reinforcing institutions might fail to achieve the intended objectives. More rational legislative initiatives should consider that the introduction of gender quotas might be not sufficient to promote female representation on boards of directors, if gender persists in other institutions.

This thesis contains a total of six chapters and it has been structured as follows.

Chapter 1: Literature Review

This chapter reviews the main themes related to the subject of gender diversity on corporate boards, by articulating them into two mainstreams: 1) characteristics, impact, rationales, and antecedents of women on boards; and 2) forms, impact, rationales and antecedents of gender regulatory policies for boards of directors. The state of the art reveals some areas of research that still need further investigations. Although corporate governance research has recognized the importance of welfare, labour and cultural institutions in shaping gender diversity on boards, it has almost neglected the existence of complementarities between these three institutional domains and their potential synergistic effects on female representation on boards. Moreover, one of the most unsolved issues refers to the functional performance of gender quotas for boards of directors. The controversial effects that gender quotas may have of firm/board performance have led to great political disagreements and some academic scepticism on their actual necessity and sufficiency as appropriate mean to achieve a higher number of women on boards. Clearly, designing public policies that are suitable to promote gender diversity in boardrooms requires a deepened understanding of the institutional antecedents of female underrepresentation on boards. Unfortunately, very few studies have addressed the

relationships between institutional antecedents of female underrepresentation on boards and the use of public regulatory policies, thus leaving completely separated these two streams of research. These unsolved issues appear to intersect intimately each other and they suggest the need for adopting a comprehensive and unique conceptual framework to solve them. Indeed, existing national configurations really matter for the introduction of new affirmative action policies. When a new regulatory policy or institution is enacted into a given national system, it may fail to gain the expected objectives, because of the synergic effect of complementarities. This state of affairs represents the starting point of the present work.

Chapter 2: Theories and Propositions

This chapter details the assumptions of three theories involved in this research: institutional complementarities theory, *configurational* theory, and set theory. The adoption of a multiple theoretical lens has a twofold aim: 1) to develop explicit theoretical arguments about the causal mechanisms that link women on boards to a bundle of multiple interconnected institutions; and, 2) to argue the consequences of these linkages in terms of necessity and sufficiency of the introduction of gender quotas at board level. The existence of complementarities between welfare, labour and cultural institutions is argued according to their similar *gendered* structures. The presence of gender in each institution reinforces the presence of gender in the others, thus generating strong complementarities and synergic effects on the national outcome of interest (i.e., women on boards). The assumption that complementary institutions have mutually reinforcing effects on female representation on boards underlies a claim of *conjunctural causation*, intended as the conjunction or combination of multiple causal conditions for the outcome at hand. In this way, the interdependence of institutions poses a problem of causal complexity, defined in terms of multiple conjunctural causal relations where no single cause may be either necessary or sufficient. For this reason, the development of propositions is informed by the assumption of set theory, particularly suitable when the inquiry concerns the study of causally complex relations. Overall, this work assumes the existence of two *equifinal* and mutually non-exclusive bundles of causal conditions that can equally lead to a higher number of women on boards. More exhaustively, the first proposition suggests a sufficient combination of "gender neutral" national conditions that can lead to a higher number of women on boards, without the need for enacting gender quotas at board level. With regard to the functional performance of gender quotas for boards of directors, this study proposes that they are a sufficient, but not necessary condition to achieve a higher number of women on boards.

Chapter 3. Method

By using a fuzzy sets / Qualitative Comparative Analysis (fs/QCA), this study compares national configurations of the 27 EU countries. The essential scope is to empirically verify the existence of institutional complementarities and joint causal effects. To that end, this

chapter describes the main steps and procedure of fs/QCA and it stresses the importance of using this method as both a research approach, and an analytical technique. It presents the criteria that were used for selecting cases (EU countries) and causal conditions (maternity leave, paternity leave, parental leave, childcare services, female employment, female part time employment, level of gender equality in the overall society, and forms of regulation for female representation on boards) to be involved in the analysis. After defining the research setting, it describes the measures that were chosen to quantitatively express both causal conditions and outcome. At the same time, this chapter provides a detailed description of the criteria and qualitative anchors that are required for the process of calibration, i.e. the transformation of conventional variables into fuzzy sets. In particular, it focuses on the "direct method" of calibration, which transforms interval-scale variables into the metric of log odds, and then into the degree of membership in the target (fuzzy) set. This method requires to establish three important qualitative anchors according to theoretical and substantive knowledge at hand: 1) the threshold for the full membership of countries in the target set; 2) the cross-over point where cases are neither in nor out the set; and 3) the threshold for the full non-membership of countries in the target set.

Chapter 4: Analysis and Results

This chapter describes the remaining steps of fs/QCA. In particular, these steps pertain to the construction and analysis of the truth table, which contains all the logically possible combinations of causal conditions for an outcome, and where each row represents a unique configuration. Afterwards, this chapter presents the results of the analysis of sufficiency and necessity. On the one hand, the analysis of (individual) sufficiency and necessity shows that, taken one at time, each elected institutional condition is neither a sufficient nor a necessary condition on its own to achieve a higher number of women on boards. This means that gender quotas for boards of directors result to be neither a necessary nor a sufficient condition for gender diversity on boards. Conversely, the truth table analysis (analysis of sufficient conditions), reveals the existence of a unique configuration of national institutional conditions that is sufficient to achieve a higher number of women on boards. In sum, these results provide support for the assumptions related to the existence of institutional complementarities and conjunctural causation, but not for the occurrence of other *equifinal* pathways for achieving a comparatively higher number of women on boards.

Chapter 5. Discussion and Conclusion

This chapter presents an extensive discussion related to the empirical evidence emerged from the qualitative comparative analysis between the 27 EU countries. The most notable finding is that the unique configuration resulting from the empirical analysis almost exactly overlaps with the "ideal" conjunction of causal conditions that was formulated in Proposition 1 (excepted for the condition "high level of female part time employment").

Since this configuration reflects theoretically-informed assumptions, it can be considered an (almost) "ideal type" of national model for gender diversity on boards. Overall, this chapter offers a detailed description of the main contributions of the research and it emphasizes a number of theoretical and practical implications. Finally, it shows some limitations of this study and illustrates a new research agenda to investigate the existence of hierarchies between complementary institutions, as well as dynamics and directions concerning the institutional change for women on boards.

CHAPTER 1   LITERATURE REVIEW

OVERVIEW: This chapter reviews the main themes related to gender diversity on boards of directors, in terms of characteristics, impact, rationales and antecedents of both female representation and gender regulation policies. Overall, corporate governance research is now recognizing the importance of national institutional domains for gender diversity on boards, as well as the complexities of their interconnection and their underlying causal mechanisms. However, very few studies have dealt with this complexity and many research questions still need to be answered. Filling these gaps contributes to better understand the interrelated forces that shape female representation on boards, hence allowing for a more rational design of regulatory policies aimed at promoting gender diversity on boards.

1.1 Women on boards of directors

Corporate governance research has explored several issues related to women on the boards of directors. The first comprehensive review on this topic was provided by Terjesen *et al.* (2009), who highlighted that very few contributions have addressed theoretical development, making this stream of research mainly descriptive. Indeed, primary attention was posed on three subjects: 1) the diverse characteristics of men and women directors; 2) the performance effects of gender diversity on boards; and 3) the antecedents of women on boards. In the next paragraphs, the main studies on these topics are reviewed.

1.1.1 Characteristics

A considerable stream of research has explored the diverse characteristics of men and women directors. From a demographic perspective, women directors appear significantly younger than men directors do (Peterson and Philpot, 2007; Sealy *et al.*, 2007; Sealy *et al.*, 2008). In contrast, the findings concerning their marital status are divided. Whilst Burke and Kurucz (1998) have reported that just 47 per cent of women directors in a Canadian sample were married, a later study has shown that between 65 and 71 per cent of women directors in Australia, U.S.A. and Canada are married (Burgess and Tharenou, 2002). With regard to the number of children, Burgess and Tharenou (2002) have found that 44% of women directors in Austalia have (dependent) children and 70% in U.S.A and Canada have (any) children. Furthermore,

the authors emphasize that Australian women directors appear to have larger families (average 2.9 children), compared to UK and Canadian counterparts.

A consistent result in the extant literature is that women directors are well qualified and better educated than their male counterparts are (Peterson and Philpot, 2007; Singh *et al.*, 2008). For instance, Singh *et al.* (2008) highlight that women are more likely to have an MBA degree and international experiences, compared to male directors. Nevertheless, they often lack of opportunities to gain business experience (Terjesen *et al.*, 2009). Generally, female directors hold more multiple directorships (5 per cent) than men (< 1 per cent); this means that just a few number of women become experienced as directors (Sealy *et al.*, 2007; Terjesen *et al.*, 2009). Moreover, the representation of women on the boards of directors is more likely in non-executive positions (Singh *et al.*, 2008; Adams and Kirchmaier, 2013; Sealy and Vinnicombe, 2013). Interesting findings also concern the independence of directors. Adams and Ferreira (2009) report that women directors are more independent than men and they represent tough monitors of CEOs; female directors are found to have better attendance records than male directors and to be more likely to join monitoring committees. However, independence cannot be interpreted as a female trait, because it might be explained by other unobserved characteristics (such as social or business networks) (Ferreira, 2015).

By analyzing the director taxonomy of the 2002 Fortune 500 list of top United States companies, Peterson and Philpot (2007) have found that in most cases female inside directors are founder or family member (45.5 per cent), unlike of men (12.9 per cent). To that regard, "women (non-CEO) insider directors appear to be treated as if they offer lesser value" (Zelechowski and Bilimoria, 2004, p. 341). Despite the same level of experience-based qualifications of board or company tenure, women inside directors are found to: 1) hold fewer multiple directorships; 2) disproportionately serve in staff function; 3) hold less powerful corporate titles, and 3) earn considerably less than men inside directors, with very low chance to be in the list of top earners as their male counterparts (Zelechowski and Bilimoria, 2004).

1.1.2 Impact

A central tenet in studies concerning the effects of board composition on firm performance is that, since board members have a strategic influence on decision-making and/or supervisory roles, the board of directors is likely to affect organizational performance (Finkelstein and Hambrick, 1996). Starting from such a rationale, some scholars pointed out that gender diversity in the boardroom may lead to better decisions through the exchange of a variety of viewpoints and ideas, as well as of heterogeneous experiences and opinions (Arfken *et al.*, 2004; Erhardt *et al.*, 2003). In other words, extensive gender homogeneity among board members might lead to the exclusion of certain talents, making the corporate board rather suboptimal (Burke, 1997). If working structure and team processes are key elements for board performance (Huse, 2007), then

women directors may enhance board development activities, to the extent to which they "spend more time preparing for board meetings, trying to understand the nature and logic of board work, devote time to board evaluation, and identify areas with potential for improvement" (Nielsen and Huse, 2010, p. 140). Moreover, the presence of female directors can lighten the atmosphere of boards (Huse and Solberg, 2006), reduce conflicts (Nielsen and Huse, 2010), and it may influence board creativity through thoughtful discussions (Huse *et al.*, 2009).

However, to assess whether diversity in the boardroom affects firm performance has provided ambiguous results. Academic studies have documented that diverse demographic characteristics in boards of directors are positively associated with return on investment and/or return on assets (e.g., Erhardt, *et al.*, 2003; Carter *et al.*, 2010), although significant relationships with financial performance have not always been detected (see for example the mixed results obtained by Carter *et al.*, 2010). Similar mixed findings have been reported in the extant literature on gender diversity on boards. For instance, Carter *et al.* (2003) have found that the presence of women on the board of directors in a sample of US firms was positively associated to firm value. Moreover they have shown that, compared to all-male boards of directors, firms with two or more women directors performed better on both firm value (1.58 versus 1.03) and ROA (5.2% versus 2.5%). Positive relations between the presence of women in top management positions and firm performance have also been observed by Dezsö and Ross (2012), but only when firm's strategy was focused on innovation. By investigating non-financial firms in Spain, Campbell and Mìnguez-Vera (2008) have confirmed the positive effect of gender diversity on firm value and they have firmly argued that a higher number of female board members may generate economic gains. In a later study, these authors have also verified that the appointment of female directors is related to a positive short-term reaction of the stock market and it is positively associated with long-term firm value (Campbell and Mìnguez-Vera, 2010). Similar correlations have been found trough the analysis of listed Australian corporations (Nguyen and Faff, 2012).

Many other contributions explored the relation between women on boards and firm performance by making reference to a critical mass threshold. The critical mass theory states that when a minority group reaches a certain number-threshold, its influence grows and it may have an impact on group interactions (Kanter, 1977a; Kanter, 1977b; Grey, 2006). In studies of gender diversity on boards, empirical evidence have suggested that having three or more women on the board of directors normalizes their presence and enhances their contributions to both board dynamics and processes (Konrad *et al.*, 2008). In this vein, a number of research have supported that a critical mass of three or more women on boards is positively related to firm innovation (Torchia *et al.*, 2011) and firm performance (Joecks *et al.*, 2013). Hence, three has become the "magic number" of women in the boardroom (Joecks *et al.*, 2013).

As opposed to the "positive" research, several studies have reported mixed or

negative performance effects (e.g., Shrader *et al.*, 1997; Rose, 2007; Francoeur *et al.*, 2008; Adams and Ferreira, 2009; Mìnguez-Vera and Martin, 2011). The underlying explanations refer to the fact that diversity on boards may fragment working team by increasing conflicts and factions (Adams *et al.*, 2015), or that "perception of women as unequal board members may limit their potential contribution to board decision-making" (Nielsen and Huse, 2010, p. 16). Therefore, decision making in board of directors may not be very effective. In this vein, whilst Shrader *et al.* (1997) have found that a higher percentage of women managers were related to higher financial profitability measures, their results did not support the same for women in top management team and on the board of directors. Another interesting study has revealed that a high proportion of women officers were associated to positive and significant returns, while women on corporate boards or on both corporate boards and top management did not have a significant impact on financial performance (Francoeur *et al.*, 2008). Adams and Ferreira (2009) have reported that female directors substantially affect board inputs and board governance, but "the true relation between gender diversity and firm performance appears to be more complex" (Adams and Ferreira, 2009, p. 308). More in depth, their results suggest that the greater is the gender diversity of the board, the worse the firm performance. Mìnguez-Vera and Martin (2011) have noticed the same negative impact in a sample of Spanish small and medium enterprises. Other research indicates that shareholders react more negatively to the announcements of female rather than male CEO appointments (Lee and James, 2007), and that "firm creates more value for its owners when the board has no employee directors, when its directors have strong links to other boards, and when gender diversity is low" (Bøhren and Strøm, 2010, p. 1281). Finally, no significant relationship between female members on boards and firm performance has been found by Rose (2007) and Chapple and Humphrey (2014).

Given the differences in measures of performance, time, methodology, contextual issues, empirical specifications and omitted variables, this set of studies has appeared rather heterogeneous (Ferreira, 2015; Adams *et al.*, 2015). More recently, Post and Byron (2015) have performed a meta-analysis of 140 contributions on the relationship between female board representation (defined as the number, proportion, or presence of women on boards of directors) and firm financial performance (both accounting returns and market performance). Their statistical investigation has highlighted: 1) a positive relation between female board representation and accounting returns, especially in those countries where stronger shareholder protections occur; and 2) positive effects on market performance in countries with greater gender parity; otherwise they are near-zero, or negative in countries with low gender parity.

1.1.3 Rationales and antecedents

Deepening causes and antecedents of the underrepresentation of women on boards was the aim of a numerous contributions, which explored the factors that mainly affect this shortage. Academic research has addressed these issues at four levels: individual, firm, board and industry/environment (Terjesen *et al.*, 2009). Whilst the majority of studies have focused on the micro (individual directors) and meso (boards and firms) levels, mostly in single-country settings, little research has addressed macro-level issues (concerning industry and environment), with very few contributions to the country-level antecedents of women on boards (Grosvold and Brammer, 2011; Terjesen and Singh, 2008). Moreover, an interesting approach has been provided by Gabaldon *et al.* (2015), who have analyzed the causes of gender imbalance on board from a supply and demand perspective, by considering board directors as a labour market. Concerning the supply-side barriers, the aforementioned authors have underlined the importance of gender differences in values and attitudes, gender role expectations, and work-family conflict. The demand-side barriers refer to gender discrimination and gender-based bias at firm level, as well as to the influence of institutions at environment-level.

Overall, the major arguments for female underrepresentation on boards of directors include:

1) the lack of human and social capital (e.g., Burke, 2000; Doldor, *et al.*, 2012; Farrell and Hirsch, 2005; Sheridan and Milgate, 2005; Singh and Vinnicombe, 2006);

2) flawed appointment processes (e.g., Bilimoria and Piderit, 1994; Kanter, 1977; Oakley, 2000; Westphal and Zajac, 1995);

3) attitudinal and organizational biases affecting women' career advancement (e.g., Morrison *et al.*, 1992; Ryan and Haslam, 2005; Terjesen and Singh, 2008; Williams, 2003); and

4) national institutional environment (e.g., Adams and Kirchmaier, 2013; Grosvold and Brammer, 2011; Terjesen and Singh, 2008).

Human and social capital. Rooting in human capital theory[1], a common argument for the lack of gender diversity on boards is the assumption that women do not have adequate competences, qualifications and experience that are essential for board positions (Burke, 2000; Doldor, *et al.*, 2012). This is true especially in "male-dominated" environment, where male leadership roles prevail, by making more difficult for women to emerge and build profitable relationships and to be accepted into

---

[1] According to human capital theory, the stock of education, skills and experience can benefit both the individuals and their organizations.

influential networks (Carli, 1990; Eagly, 2007; McPherson *et al.* 2001). Therefore, it is persistent in extant literature the idea that there are not enough qualified women in the pipeline of potential directors or that women have not been in the pipeline long enough (Doldor *et al.*, 2012). To that regard, Farrell and Hirsch (2005) suggest that the limited number of qualified candidates may be due to the extensive presence of women in multiple directorships. In this way, just a small pool of women with the "right" qualifications emerges.

The underrepresentation of women on boards is also explained by their exclusion from social networks, which are critical in the election to board positions through sponsorship and recommendation mechanisms (Terjesen *et al.*, 2009). The importance of business expertise, personal connections, business contacts, and visibility for the rise to top positions has been emphasized by several contributions (e.g. Sheridan and Milgate, 2005; Singh and Vinnicombe, 2006).

Appointment process. Flawed appointment processes represent other important antecedents, such as unclear selection criteria, unconscious bias in the selection process, excessive importance of social capital and personal reputations (Doldor *et al.*, 2012). Overall, gender-based stereotypes and sexual discriminations may seriously affect the process of selection to top positions (Oakley, 2000). Kanter (1977) states that men in powerful position are more likely to choose other men. In doing so, they replicate male-dominated board structures and foster the *homosocial* reproduction. This behaviour is predicted by self-categorization theory (Tajfel and Turner, 1986), according to which individuals provide a higher evaluation for "in-group" members, because of similar characteristics. Confirming such a rationale, Westphal and Zajac (1995) have found that when incumbent CEOs are more powerful than their boards of directors, new appointees are likely to be demographically similar to the CEO. Conversely, when boards are more powerful than their CEOs, new appointees resemble the existing board. These findings suggest that both CEO and board members favour new directors with similar demographic characteristics. In a similar vein, Bilimoria and Piderit (1994) have reported that the presence of systematic sex-based biases against women in the selection of board committee members is pervasive.

Career advancement. Another vigorous stream of research dealt with attitudinal and organizational biases that may hinder women' career paths and their rise to the top. The metaphor of the "glass ceiling" refers to these biases as invisible barriers to women' advancement and states that women are kept from reaching top corporate positions not for their ability to handle this job, but just for being women (Morrison *et al.*, 1992). Since changing attitudes takes a long time, workplaces persist to be largely male-oriented (Williams, 2003), and women are more likely to be employed in low-paying sectors, in less strategic areas and in non-executive directorships (Peterson and Philpot,

2007; Adams and Kirchmaier, 2013). Moreover, women are more likely to be appointed in boards of companies that suffer poor performance and downturn. Researchers refer to this circumstance as the "glass cliff" phenomenon, because of their risky or precarious positions (Ryan and Haslam, 2005; 2007). This means that women are seriously limited in the acquisition of adequate human capital and social capital for board positions. According to Ragins *et al.* (1998, p. 29), "commitment to breaking the glass ceiling, while important, is not sufficient; for change to occur, CEOs must also have a clear understanding of the subtle and overt barriers women face in their advancement". As a result, the female talent pipeline to executive roles and the related barriers are become a central issue in studies of gender diversity on boards (Sealy and Vinnicombe, 2013). To this end, a relevant contribution has been made by a plethora of research in law, management, sociology, and psychology tradition. These studies have provided strong support for the role of stereotypes, prejudices and prescriptive social norms in affecting women's professional career (e.g., Swiss and Walker, 1993; Williams, 2000: 2005). Among the others, primary attention has been posed on the presence of gender-based stereotypes and gendered social systems (Singh and Vinnicombe, 2004).

Gender-based stereotypes affect the perception of women in workplaces, the way they handle their job and their career advancement (Williams, 2000; 2003). For instance, the fact that women have to bear and nurse children determines a functional asymmetry in marital roles (Pearson and Bales, 1955). "The related presumption then is that men, who cannot perform these biological functions, should specialize in the instrumental realm of work" (Barnett and Hyde, 2001, p. 782). Such prescriptive social norms represent the foundations of the "breadwinner" and "caregiver" stereotypes. In other words, traditionalist roles associated with men and women have a twofold consequence: 1) family responsibilities and childcare are associated with women; and 2) work and career are associated with men. Accordingly, women's family responsibilities "hinder or are perceived to hinder their commitment to the organisation and their lack of involvement in corporate networks that provide access to powerful people" (Terjesen and Singh, 2008, p. 56).

In this regard, Williams (2003) argues that much of the gender inequality depends on the way in which the relationship between work and family is organized. Whilst the prescriptive norm of the "ideal worker" is associated with full-time and full-force for working, the prescriptive norm of the "ideal mother" refers to full-time and full-force for childbearing and childrearing. Clearly, they are two contrasting and *gendered* social norms (Williams, 2003). The most tangible result is that the "ideal workplaces" are shaped on men's bodies and men's traditional life patterns, with direct discrimination against women (Williams, 2000; Guillaume and Pochic, 2007). For instance, managerial careers require full-time availability and geographical mobility: "the typical organizational career pattern, linear and progressive, ignores individual life cycles and implicitly assumes that managers are male" (Guillaume and Pochic, 2007, p. 22).

Empirical evidence has also supported that work–family conflict and gender imbalance in family responsibilities hinder women from reaching senior managerial positions (Linehan and Walsh, 2000). Taking parental leave or flexible work arrangements could have negative effects on career advancement and managerial ambitions of women (Drew and Murtagh, 2005; Manchester *et al.*, 2010).

Interestingly, Williams (2003, p. 13) argues that the glass ceiling is created, in part, by the "maternal wall". The latter concept was coined by Swiss and Walker (1993) and it has been used by Williams (2005) to embrace all the prescriptive stereotypes associated with the maternal role of women and to the wrong assumptions that women cannot succeed in multiple roles (e.g. statistical discrimination, hostile as well as benevolent stereotyping, stereotype by perceived competence, caregiver stereotype). Women are discriminated in the workplace because of their past, present and even future pregnancies, or because they take parental leave or they prefer part-time job (Williams and Westfall, 2006). Ganguli *et al.* (2011) confirm that women face three gaps in their labour force participation: the 'labour force participation gap' (between women and men), the 'marriage gap' (between married and single women) and the 'motherhood gap' (between mothers and non-mothers). The reconciling of motherhood and marriage with a job requires cultural attitude changes and public policies that encourage the work-life balance. Motherhood, as a source of discontinuity in work, may lead employers to lower investment in skills, associated with a lower employee's value and, therefore, fewer opportunities for career (Lyness *et al.*, 1999). Therefore, the few "wonder women" who are able to reach high-level careers are well paid, but at the expense of their individual social life: "not having children or outsourcing childcare" (Terjesen *et al.*, 2009, p. 331). Conciliation is now being recognized to have tangible effects on the number of potential candidates for board positions (Gabaldon *et al.*, 2015).

Environment. In general, studies addressing the influence of environmental contexts on female representation on boards have mainly focused on the role of institutions (Terjesen *et al.*, 2009). On the one hand, this research approach is well suited with a long tradition of economic studies that recognize the influence of institutional contexts on several corporate governance phenomena (see for example, Aguilera and Jackson, 2003; Aguilera and Cuervo-Cazurra, 2004; Alon, 2013; Denis and McConnell, 2003; Judge *et al.*, 2008; Judge *et al.*, 2010; Ntim and Soobaroyen, 2013; Zattoni and Cuomo, 2008; Zattoni *et al.*, 2009). On the other hand, institutional approaches have offered a more systematic understanding of the structural barriers to female representation of women on boards (Grosvold and Brammer, 2011). For instance, by using data from 43 countries, Terjesen and Singh (2008) have explored whether women's representation on corporate boards may be shaped by the social, political and economic structures of national environment. Their findings show that countries with more women in senior

management positions and less gender pay gap between women and men have a higher representation of women on boards. This is an interesting result, since women are more likely to gain board positions in countries where women and men earn similar amounts. Conversely, high levels of female representations on boards are less likely in countries with a longer tradition of women's political representation. In a similar vein, Grosvold (2011) has analyzed the impact of institutional contexts on the prevalence of women on boards. She finds that politically and culturally liberal countries, where women have a major access to education and where religion is less pervasive, have more women on boards. Moreover, she suggests that "firms should also evaluate the type of national and industry institutional climate they operate in and bear in mind that certain contexts make it harder to pursue executive careers" (Grosvold, 2011, p. 542).

In order to assess whether national institutional systems were related to the proportion of women on boards, Grosvold and Brammer (2011) have performed a cross-country analysis that included 38 countries and covered the years 2001-2007. By drawing upon five different national systems (economic, business, legal, governance and cultural systems), the authors find that culturally and legally-oriented systems play the most relevant role in shaping gender diversity on boards of directors. In detail, their results reveal that French and Germanic legal heritages, where generous welfare provisions encourage women to balance work and family, have fewer women board directors. Looking at national cultural systems, Nordic European and Eastern European culture-oriented countries are significantly related to a greater percentage of women on boards. This is due to their lower levels of gender differentiation, meaning "the degree to which men and women are viewed differently in a given" society (Grosvold and Brammer, 2011, p. 121).

Similar results appear in the study of Adams and Kirchmaier (2013), showing that national culture is significantly related to female directorship, at the extent to "the more people believe that women's role is at home, the lower director participation will be" (Adams and Kirchmaier, 2013, p. 20). In addition, the authors find that presence of (non-executive) women on boards is positively related to female labour force participation, by excluding part-time and unemployed workers. Such evidence recommends the importance of national policies that promote full-time female employment and family services to generate a pipeline of potential women for top corporate positions, as part-time jobs could undermine women's professional careers. This work represents the first attempt to empirically assess the linkages between the under-representation of women on boards and their role in the labour market. Indeed, Adams and Kirchmaier (2013, p. 1) start from the assumption that "the list of barriers to female representation in management is analogous to the list of barriers to female labour participation", such as discrimination, human capital, culture and psychological attributes.

It is interesting to note that European institutions support this tenet. The European Parliament has enacted a resolution on eliminating gender stereotypes[2], recognizing the disproportionate involvement of women in flexible and part-time jobs and the persistence of the traditional belief that women carry the main family responsibilities. Indeed, the resolution emphasizes that "gender stereotypes have a tendency to be self-fulfilling and that, if women are never given the chance to prove themselves, they will never manage to break the barriers blocking their way". For these reasons, the European Union asks member states to deconstruct gender stereotypes, by providing: 1) a major number of inexpensive and high-quality childcare and eldercare facilities; 2) suitable forms of parental leave for both men and women; and 3) establishing binding quotas for increasing the presence of women in positions of responsibility in the largest listed companies and in decision-making bodies in the political and business worlds.

1.2 Gender regulation for boards of directors

Despite the last years have seen a growing commitment in fostering gender equality in the boardroom, women are still not equally represented on the boards (Terjesen *et al.*, 2014) and their presence in directorship positions is actually worse than many surveys can suggest (Adams and Kirchmaier, 2013). To change this direction, EU Institutions have asked listed public companies to increase the quota of female representation on boards to 30% by 2015 and 40% by 2020. Clearly, the application and the enforcement of law greatly differ across European countries and they are likely to determine different results. Generally, supporters of gender quotas regulation for the board of directors often make a "business case" for women on boards (Ferreira, 2015), assuming female representation in the boardroom as positively related to firm performance. However, the ambiguous results associated with the impact of board gender quotas (e.g., Ahern and Dittmar, 2012; Matsa and Miller, 2013) have led to some scepticism and to the corresponding doubt about their effectiveness. Therefore, the debate about gender quotas is controversial and still open. Beyond the "business case", the importance of reframing this debate using both utility and justice arguments is now being recognized (e.g. Seierstad, 2015; Ferreira, 2015) and several theoretical perspectives about the adoption and diffusion of gender quotas are spreading in academic literature (e.g. Teigen, 2012; Terjesen *et al.*, 2014). I detail these issues below.

---

[2] European Parliament resolution of 12 March 2013 on eliminating gender stereotypes in the EU. Available at: http://www.europarl.europa.eu/sides/getDoc.do?pubRef=-//EP//TEXT+TA+P7-TA-2013-0074 +0+DOC +XML+V0//EN

1.2.1 Forms

The institutional intervention of states through public policies aims to protect individuals and their families from insecurity and uncertainty (Girotti, 1998). Laws on maternity protection are clear examples of a primarily protective perspective. However, over the last decades, State intervention has moved from protection to promotion of women's representation in politics, labour markets, and top management positions. Regarding labour markets, states can intervene in two ways to support gender equality (Chang, 2000). First, states can intervene in the private sphere, by providing "substantive benefits" that help women in work-life balance, such as maternity leave and other services for working mothers. Second, they can ensure "equality of access" in public sphere, by legislating different measure to promote female participation in the labour force (e.g., antidiscrimination laws, equal pay, and so on). The strongest forms of such interventionism are affirmative action policies that mandate an equal gender representation across occupations (Chang, 2000). Generally, these affirmative action policies consist of either legislative or voluntary measures. Narrowing the attention on board gender legislation, Seierstad and Opsahl (2011) distinguish between: 1) soft policies for "equality of opportunity", such as corporate governance codes or voluntary quotas; and 2) hard policies for "equality of outcomes", typically gender quotas and targets.

In order to get information about the variety of forms that gender regulation for boards of directors can have, a deepened documentary analysis was conducted (Bailey, 1994; Payne and Payne, 2004; Scott, 1990). In detail, it referred to: 1) legal texts, including national laws, administrative regulations, and corporate governance codes; 2) official documents (e.g., European Commission National Factsheets, 2013; European Commission, 2012a); and 3) previous academic contributions (e.g. Terjesen *et al.*, 2014), by taking into account the latest updates. In the choice of the documentary sources, the four control criteria described by Scott (1990) were followed, namely: authenticity, credibility, representativeness, and meaning. Since primary reference was made to public and official sources, the analysis was particularly careful and reliable. Below is a more detail description of the resulting review, while Table 1.1 summarizes the main differences across countries.

Legislative measures. Since Norway enacted gender quotas on boards, "a snowball started rolling" (Huse and Seierstad, 2014, p. 38). Some countries have followed the Norwegian experience, while other countries are wondering whether similar measures should be adopted. However, across countries, gender quotas legislation for boards of directors differs for target, time and penalties for non-compliance (Terjesen *et al.*, 2014).

Norway. In Norway, the law of 40% female quotas was proposed in 2003. It was definitively enacted in 2006 for state-owned companies and 2008 for publicly traded companies. The Norwegian law provides sanctions for non-compliance; exactly companies are dissolved (Terjesen *et al*., 2014). However, "despite Norway's reputation as a country of gender equality, the use of gender quotas within the private sector in Norway was controversial and debated" (Huse and Seierstad, 2014:38). Indeed, the Norwegian initiative has been defined as "coercive approach", due to the use of legislation (Seierstad and Opsahl, 2011).

Spain. In 2007[3], Spain aimed to achieve 40% female quotas by 2015 only for large publicly traded companies (with more than 250 employees). The law appears as recommendation, with no relevant sanctions for non-compliance, except for some effects on the consideration for public subsidies and state contracts (Terjesen *et al*., 2014).

France. In France, the objective was to achieve 20% of female directors by 2014 and 40% by 2017[4]. This rule is applied to companies with at least 500 workers and more than €50 million of revenues. For non-compliant companies, the French government established that any board appointment is revoked and fees to directors are suspended.

Italy. In 2011[5], Italy required up to one-third (33%) of each sex on the management board and supervisory board by 2015. The rule includes companies listed on the stock exchange and state-owned companies (Cuomo and Mapelli, 2011). The National Securities and Exchange Commission (Consob) guarantee the enforcement of the law with fines and forfeiture of elected directors.

---

[3] Organic Law 3/2007 of 22 March 2007 on effective equality between men and women. Source: European Commission (2012:18). Available at : http://ec.europa.eu/justice/gender-equality/files/women-on-boards_en.pdf.

[4] Loi ° 2011-103 du 27 janvier 2011 relative à la représentation équilibrée des femmes et des hommes au sein des conseils d'administration et de surveillance et à l'égalité professionnelle publiée au Journal Officiel du 28 janvier 2011. Source: European Commission (2012:17). Available at : http://ec.europa.eu/justice/gender-equality/files/women-on-boards_en.pdf.

[5] Act No. 120 of 12 July 2011, published in Official Journal No. 174 of 28 July 2011 (Legge 12 luglio 2011, n. 120, "Modifiche al testo unico delle disposizioni in materia di intermediazione finanziaria, di cui al decreto legislativo 24 febbraio 1998, n. 58, concernenti la parità di accesso agli organi di amministrazione e di controllo delle società quotate in mercati regolamentati", GU n. 174 del 28-7-2011). Source: European Commission (2012:18). Available at : http://ec.europa.eu/justice/gender-equality/files/women-on-boards_en.pdf.

Belgium. Similarly, in 2011[6] Belgium introduced an amendment to the Company Code requiring at least on third (33%) of each sex among board members of publicly listed companies (by 2018) and state-owned companies (by 2012). Specific sanctions for non-compliance are provided: 1) the suspension of any benefits to directors; and 2) any appointment that does not comply with quota target is void.

Finland. Since 2005, Finland required state-owned companies, government committees, working groups, advisory boards, commissions and municipal bodies to appoint at least 40% women in their boards of directors. Moreover, "body, agency or institution exercising public authority, or a company in which the Government or a municipality is the majority shareholder has an administrative board, board of directors or some other executive or administrative body consisting of elected representatives, this must comprise an equitable proportion of both women and men, unless there are special reasons to the contrary"[7]. On 20 October 2008, the Finnish Corporate Governance Code, applicable to listed companies, replaced the Corporate Governance Recommendation (2003). The revised version requires "both genders shall be represented on the board"[8]. There are no penalties for non-compliance, but a "comply or explain" principle is applied: companies have to explain the deviation from the Code.

Germany. Germany reacted very late to the debate about gender regulatory policies for the board of directors, with strong political disagreement on the enactment of gender quotas (Seierstad *et al.*, 2015). Originally, the German government opted for self-regulation, by asking the supervisory board to determine targets in terms of the share of women on the management board. Many individual businesses have set up voluntary target or quotas to increase the number of women on their boards. Among the others, Deutsche Telekom, Henkel and Bayer have shown a great commitment to that effect (European Commission, 2012a). However, the change of political parties in power has led the new coalition to agree on the enactment of gender quotas law. On March 2015, the law on equal participation of women and men in leadership positions in the private and public sector has been adopted. Currently, the German Corporate

---

[6] Law modifying the law of 21 March 1991 on the reform of certain public economic enterprises, the Company Code and the law of 19 April 2002 concerning the rationalisation of functioning and management of the National Lottery aiming to guarantee the presence of women in the boards of autonomous public enterprises, listed companies and National Lottery, published in Moniteur Belge/Belgisch Staatsblad of 14 September 2011, p. 59600. Source: European Commission (2012:17). Available at : http://ec.europa.eu/justice/gender-equality/files/women-on-boards_en.pdf.

[7] Act on Equality between Women and Men, No. 609/1986 as amended up to 488/2011 included, Section 4a (232/2005), "Composition of public administration bodies and bodies exercising public authority". Available at: http://www.finlex.fi/en/laki/kaannokset/1986/en19860609.

[8] An English version of the Finnish Corporate Governance Code can be accessed in: Securities Market Association (20 October 2008), "Finnish Corporate Governance Code", web source: http://cgfinland.fi/files/2012/01/cg-koodi_2008_eng.pdf.

Governance Code, as amended on May 2015[9], states: "In listed companies for which the Codetermination Act, the Codetermination Act for the Iron and Steel Industry or the Codetermination Extension Act apply, the Supervisory Board shall comprise at least 30 percent women and at least 30 percent men", with effect from 1 January 2016. The other companies covered by the Equality Act the Supervisory Board are asked to determine targets for the share of women by 30 September 2015, and to comply by 30 June 2017[10].

Other countries. Gender quotas for board of directors were also enacted in Israel. The Government required 50% women on boards for state-owned companies, and 1 female director for publicly traded companies (Terjesen *et al*., 2014). In Québec (Canada), the boards of directors of state-owned enterprises should include "an equal number of women and men"[11]. Therefore, 50% women on boards are required. On August 2010, Kenya has introduced the rule of 33% female quotas, applicable to state-owned companies (Terjesen *et al*., 2014). In this way, "more than two-thirds of the members of elective or appointive bodies shall be of the same gender"[12]. In Iceland, gender quotas for boards of directors passed in 2010: 40% from each sex is expected by 2013 from both state owned and publicly traded companies with more than 50 employees. These countries have not provided any sanction for non-compliance. Conversely, the debates about gender quotas have been limited in the media and parliaments of certain countries, such as Japan, Indonesia and Mexico (Terjesen *et al*., 2014).

Voluntary measures. Beyond the enactment of gender quotas legislation, affirmative action policies include voluntary initiatives, such as corporate governance codes, voluntary targets, charters and business initiatives (for example, mentoring, training and networking programmes). Since gender quotas legislation, as "hard" strategy, is not appropriate in certain countries, voluntary measures represent the "liberal approach" to gender diversity on boards (Seierstad and Opsahl, 2011).

---

[9] The English version of the Deutscher Corporate Governance Kodex, as amended on May 5, 2015, is available at: http://www.dcgk.de/en/code.html.

[10] These deadlines were established according to the "Law on Equal Participation of Men and Women in Private-Sector and Public-Sector Management Positions", Section 25 Subsection 1 EG-AktG (Introductory Law of the German Stock Corporation Act), German Federal Gazette I. 2015, 642, 656). Further information can be accessed at: http://www.dcgk.de/en/code/current-version/supervisory-board.html.

[11] Bill 53, 2006, An Act Respecting the Governance of State-Owned Enterprises and Amending Various Legislative Provisions. Available at http://www2.publicationsduquebec.gouv.qc.ca/dynamicSearch/telecharge.php?type=5&file=2006C59A.PDF.

[12] The Constitution of Kenya (2010), Revised edition, Published by the National Council for Law Reporting with the Authority of the Attorney General, chapter 4, part 2, art. 27, section 8, p. 25. Available at: https://www.kenyaembassy.com/pdfs/The%20Constitution%20of%20Kenya.pdf.

United Kingdom. In 2011, the Lord Davies Report contributed to the promotion of female representation in the UK boards of directors. The report recommended, "All Chairmen of FTSE 350 companies should set out the percentage of women they aim to have on their boards in 2013 and 2015. FTSE 100 boards should aim for a minimum of 25% female representation by 2015 and we expect that many will achieve a higher figure"13 (p.4). Afterwards, the UK Corporate Governance Code was amended14 to require listed companies: 1) to establish a policy concerning boardroom diversity and measurable objectives for implementing the policy; and 2) to provide annual report of the progress made in achieving the objectives. The rule of "comply or explain" requirement ensures the disclosure of any appointments that diverge from the recommendation. Moreover, other voluntary measures taken in the United Kingdom include the mentoring programme "FTSE 100 Cross-Company Mentoring Scheme", in order to support senior female directorship, and the initiatives of the "30% Club", a non-commercial organization that promotes a higher female representation in the boards of directors (European Commission, 2012a). As noted by Seierstad and Opsahl (2011), the cooperation among various stakeholder groups in the UK is a typical example of a "collaborative approach" to gender diversity on boards.

Sweden. According to the Swedish Corporate Governance Code (point 4.1), applicable from 1 February 2010, "the board members elected by the shareholders' meeting are collectively to exhibit diversity and breadth of qualifications, experience and background. The company is to strive for equal gender distribution on the board"15. In order to improve the initiatives taken on the subject of gender diversity in the boardroom, the Swedish Code has been revised on May 2014, with effect from January 2015. New rules mainly concern the work of nomination committees, which have to "provide specific explanation of its proposals with respect to the requirement to strive for gender balance contained in rule 4.1". Sweden has also promoted the entrepreneurship of women through national programmes, while the programme "Styrelse Kraft" (meaning "board power") taken by the State owned company ALMI Företagspartner, has provided board training, networking and mentorship initiatives in

---

[13] The Lord Davies Report (2011) can be accessed at: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/31480/11-745-women-on-boards.pdf.

[14] The emended version of the UK Corporate Governance Code (Financial Reporting Council, September 2014) is available at: https://www.frc.org.uk/Our-Work/Publications/Corporate-Governance/UK-Corporate-Governance-Code-2014.pdf.

[15] Swedish Corporate Governance Code, Section 4, Point 4.1, page 17. The English version of the Swedish Corporate Governance Code is available at: http://www.corporategovernanceboard.se/the-code/current-code.

order to foster women on board positions (European Commission, 2012a). Finally, it is interesting to note that the actions taken by individual companies mainly regard the implementation of network and the intervention on the recruitment and promotion process, rather than voluntary targets or quotas.

Denmark. The Section 11 of the Danish Gender Equality Act (2000)[16] states that "boards, assemblies of representatives or similar collective management bodies within the public administration should have an equal gender balance". Moreover, "to the extent possible, boards, assemblies of representatives or similar collective management bodies of independent institutions, partnerships and limited liability companies which are not part of the public administration, should have an equal gender balance. This shall apply where the expenses relating to the independent institution are mainly covered by government funds or where the state holds a majority interest of the company". Later, the Committee on Corporate Governance have provided some recommendations in order to ensure a formal and transparent process for selection and nomination of candidates to boards, to integrate new talent and to guarantee diversity in relation to international experience, gender and age[17]. Some Danish companies have voluntarily chosen to establish a target of women in top management positions or to create networks groups for female managers (European Commission, 2012a). Moreover, Denmark provides a database aimed to increase the visibility of female potential candidates for board positions and the "Charter for more women in management" can be signed by Danish companies to foster the rise of women to management positions (European Commission, 2012a).

Austria. Concerning the board composition, the Austrian Corporate Governance Code requires that reasonable attention have to be given "to the aspect of diversity of the supervisory board with respect to the representation of both genders and the age structure, and in the case of exchange listed companies, also with a view to the internationality of the members"[18]. On 15 March 2011, the Council of Ministers decided to implement gradually gender quotas for boards of state owned companies. In detail, the (non-binding) targets stem from an administrative decision and they require a representation of 25% of women on boards by 31 December 2013 and a representation of 35% by 31 December 2018. If the latter target is not achieved, the Austrian

---

[16] Gender Equality (Consolidation) Act, Consolidation Act No. 553 of 2 July 2002. Available at: http://www.legislationline.org/documents/action/popup/id/6520.
[17] Section 5, Point 5.1 of the "Recommendations on Corporate Governance" (April 2010). The text (English version) is available at: http://www.ecgi.org/codes/code.php?code_id=290
[18] Section 5, Point 52, Austrian Corporate Governance Code, July 2012. Available at : http://www.wienerborse.at/corporate/pdf/CG%20Codex%202012_v5_englisch.pdf.

government will take legislative measures. Furthermore, in order to foster gender diversity in the boardroom several Austrian institutions have provided programmes of professional networks, leadership training and databases of female candidates for boards (European Commission, 2012a).

The Netherlands. The Dutch Corporate Governance Code[19] (2008, section III.1.3) encourages a balanced composition of the boards of directors with regard to gender, age or nationality diversity. On 6 June 2011, the act amending the Civil Code has established that larger private and public limited companies[20] need to take into account a minimum target of 30% of each gender in both the executive and supervisory board of directors. This is a temporary rule that has become effective in January 2013, but it will expire on 1 January 2016. Companies are subjected to the "comply or explain" principle, without penalties for non-compliance. Among the others, an important voluntary initiative in the Netherlands consists of the Dutch charter "Talent to the Top", which can be signed by companies to support the establishment of qualitative goals for female representation in senior management positions (European Commission, 2012a).

Poland. In Poland, the regulation of gender in the boardroom is set out by recommendations and voluntary initiatives. On the one hand, the Polish Code of best practice for WSE[21] listed companies recommends public companies to ensure a balanced proportion of women and men in management and supervisory functions. On the other hand, the confederation of private employers has developed the "Diversity Index" for assessing the level of diversity in their organizations and a number of programmes to promote female entrepreneurship have spread (European Commission, 2012a).

Luxembourg. According to the Principle 4 of the "X principles of corporate governance of the Luxembourg Stock Exchange"[22], an appropriate representation of both genders is required for the appointment of directors and executive managers in Luxembourg listed companies. Moreover, some networking initiatives have been taken in order to encourage the rise of women in management positions in the private sector, such as the network on decision-making "DivBiz" (European Commission, 2012a).

---

[19] Available at: http://commissiecorporategovernance.nl/download/?id=606.
[20]This rule is not applicable to small and medium-sized companies, i.e. those companies that, according with art. 2:397 paragraph 1 Civil Code, meet two of the following three criteria: 1) the value of the assets according to its balance sheet does not exceed € 17.500.000; 2) net sales for the financial year does not exceed € 35.000.000; 3) the average number of employees for the financial year is less than 250.
[21] Warsaw Stock Exchange. The Code is available at: http://www.gpw.pl/WSE_corporate_governance.
[22] Available at: https://www.bourse.lu/corporate-governance.

Greece. On 28 June 2013, the Hellenic Corporate Governance Code was amended by the Hellenic Corporate Governance Council in order to sustain the competitiveness of Greek corporations and enhance credibility of the Greek market. Among the others, recommendations for diversity of boards of directors were included to ensure "the efficient achievement of the company's targets on the basis that the company gains access to a wider talent pool"[23]. The Code asks the nomination committee to take transparent procedure in the nomination of board members and to propose board diversity policies including gender balance. Conversely, in accordance to the Law 2839/2000, imposes that at least one third of each sex should be ensured among board members or members of administrative bodies of public and private entities appointed by government, the public entities and the local and regional authorities (European Commission, 2012a). Finally, several Greek institutions have promoted initiatives aimed to the sensitization of social partners and individual businesses on the importance of equal opportunity policies, and to the diffusion of good practices (European Commission, 2012a).

Slovenia. The Slovene "Regulation on criteria for respecting the principle of gender balanced representation"[24] recommends the representation of each sex at least 40% in nominating or appointing government representatives of public enterprises and other entities of public law. It is an administrative regulation, applicable to both supervisory boards and executive boards. Conversely, the Slovene Corporate Governance Code[25] does not contain specific recommendations for gender balance in the boardroom. It generally refers to "the adoption of quality decisions based on the diversity of its members' experience and skills" (point 6.1). However, Slovenia honours those companies involved in promoting gender equality and women in management (European Commission, 2012a).

USA. In the United States, the political and academic debate about gender balance in top corporate positions has been often focused on professional and technical skills of women, rather than on their sexual diversity. To that regard, the qualitative study of Bilimoria and Huse (1997) documented that the "U.S. women directors made any

---

[23] Section A, Point II of the "Hellenic Corporate Governance Code" (October 2013), available at: http://www.ecgi.org/codes/documents/hellenic_cg_code_oct2013_en.pdf.

[24] *Uredba o o kriterijih za upoštevanje načela uravnotežene zastopanosti spolov* (*Uradni list RS*, No 103/04). Available in the original language at: http://www.uradni-list.si/1/objava.jsp?urlid=2004103&stevilka=4407.

[25] The Slovene Corporate Governance Code can be accessed to: http://www.zdruzenje-ns.si/db/doc/upl/corporate_governance_code_531.pdf.

reference to sexual behaviours at all, instead referring to the need to be professional and gain power and respect on the basis of technical/operational expertise" (Bilimoria and Huse, 1997, p. 74). Moreover, "U.S. women corporate directors denied any such differences in board functioning, saying that they were always treated as equals, that there was no exclusionary "golf club", and that social relations were professional, friendly, and cordial between themselves and the men on their boards" (Bilimoria and Huse, 1997, p. 75). Adopting this perspective and taking into account its general free-market orientation, it is not surprising that the United States considers gender quotas as a cultural and legal oddity, a "European transplant unlikely to take root here" (Alstott, 2014, p. 40). Indeed, the American government was always oriented to reduce inequality from the bottom (for example, the Paycheck Fairness Act[26]) rather than from the top (e.g. through quotas or target). Concerning the promotion of gender diversity on boards, the political debate in the USA has supported the adoption of diversity management practices rather than affirmative action policies (Seierstad and Opsahl, 2011).

Other countries. As documented by Terjesen *et al*. (2014), some recommendations for gender composition in corporate boards were also adopted in Malawi (2010), Australia (2011), Malaysia (2012), Nigeria (2011), and South Africa (2009). On the contrary, Corporate Governance Codes of many countries do not make any references to or recommendations for gender balance on the boards of directors: this is the case of Bulgaria, Croatia, Cyprus, Portugal, Czech Republic, Romania, Slovakia and Hungary (Gennari, 2015). However, some voluntary initiatives were taken to sensitise social partners or business. For instance, Lithuania and Estonia promote gender training for both employers and trade unions, while Portugal organizes awards for companies engaged in supporting gender equality (European Commission, 2012a).

Table 1.1 - Forms of regulation for gender diversity on boards of directors

Countries	Legislative Measures	Recommendations of Corporate Governance Codes	Other voluntary initiatives
Australia	-	X	-
Austria	-	X	X
Belgium	X	-	X
Bulgaria	-	-	-
Croatia	-	-	-
Cyprus	-	-	-
Czech Republic	-	-	-

---

[26] The Paycheck Fairness Act mainly concerns prohibitions against sex discrimination in the payment of wages. Available at: https://search.usa.gov/search?affiliate=usagov&query=paycheck+faireness+act.

Denmark	-	X	X
Estonia	-	-	X
Finland	X	-	X
France	X	-	-
Germany	X	X	X
Greece	X	X	X
Hungary	-	-	-
Iceland	X	-	-
Indonesia	-	-	-
Israel	X	-	-
Japan	-	-	-
Kenya	X	-	-
Lithuania	-	-	X
Luxembourg	-	X	X
Malawi	-	X	-
Malaysia	-	X	-
Mexico	-	-	-
Nigeria	-	X	-
Norway	X	-	X
Poland	-	X	X
Portugal	-	-	X
Québec	X	-	-
Romania	-	-	-
Slovakia	-	-	-
Slovenia	-	-	X
South Africa	-	X	-
Spain	X	-	-
Sweden	-	X	X
The Netherlands	X	X	X
United Kingdom	X	X	X
USA	-	-	X

1.2.2 Impact

The variety of forms that gender regulation for boards of directors takes, can determine different results. It is clear that legislative measures are likely to have stronger impact on female representation on boards, than voluntary initiatives. This is one of the reasons have led Norway to enact gender quotas legislation. Although the introduction of quotas law was proposed since 2003, the great disagreement of both politics and businesses led the Norwegian Parliament to establish that "the amendment for a gender balance on publicly listed companies boards would be withdrawn if the companies voluntarily complied by July 2005" (Huse and Seierstad, 2014, p. 38). Despite this "sunset law", and despite other several voluntary initiatives to promote gender diversity on boards, there were not significant changes in Norway and quotas law was enacted in 2006 (Huse and Seierstad, 2014; Seierstad *et al*., 2015). To this regard, many studies have confirmed that, in Norway, the introduction of gender quotas at 40% has had a considerable impact on the number of women in boards positions, and that the presence of strong sanctions has enhanced these results (Hoel, 2008; Rasmussen and Huse, 2011; Seierstad and Opsahl, 2011; Storvik and Teigen, 2010; Wang and

Kelan, 2013). Conversely, voluntary initiatives, such as mentoring, board training, and networking are considered weak means to get substantial changes in numbers (Huse and Seierstad, 2014). However, Vinnicombe *et al.* (2014) recognize that the recommendations in the Lord Davies Report may have had some effects on the number of women on boards. Indeed, they document that, after the introduction of the Lord Davies Report, the percentage of women on boards in England has risen from 12.5% in 2011 to 27.7 % in 2014. On this wake, Adams and Kirchmaier (2013) find that both quotas and corporate governance codes are correlated positively and significantly with female participation in board positions. They affirm, "Policies matter, even when they are voluntary" (Adams and Kirchmaier, 2013, p. 5).

Narrowing the attention on legislative measures, Pande and Ford (2011) suggest that gender quota for boards of directors may improve the allocation of talent in the labour market in several ways: 1) by breaking down the discrimination effects; 2) by enhancing women's professional experience on board tasks hence leading to a higher female representation on boards; and 3) by changing social norms and attitudes. They also argue that gender quotas may create a "role model" for other women, as well as they may help women to overcome self-imposed stereotypes and invest much more in their human capital (Chung, 2000; Spencer *et al.*, 1999) with positive influence on their career choices. In a similar vein, psychological research has made important contributions to understanding the effect of quotas on women's self-image and self-perceived competencies. Past studies have found that beliefs associated with affirmative action are negatively related to the self-perceived competencies of beneficiaries, hence supporting the existence of a stigma of incompetence (e.g. Heilman *et al.*, 1987; Heilman *et al.*, 1992). The rationale is that, when women are selected because of their gender, they report more negative perceptions of their ability and competence. Unzueta *et al.* (2010) have experimented that believing in affirmative action quotas can benefit women's self-image, when they think of themselves as non-beneficiaries of such a policy. Furthermore, the authors have found no support for the stigma of incompetence, specifying that such stigma occurs as long as affirmative action does not explicit that women are selected based on merit and not gender. Clearly, these beliefs may affect the behaviour that women take in the boardroom (Hillman, 2015), and plausibly the performance of boards of directors. Finally, Bøhren and Staubo (2013) have analyzed the relationship between female directors and board independence in boards with mandatory gender balance, then reporting that quotas significantly affected the increase of board independence (with 84 percent of the female independent directors, while only 50 percent of independent men directors). However, other questions still need to be answered "to truly understand boardroom diversity" (Hillmann, 2015, p. 106). In particular, Hillman (2015) wonders whether "incumbent males behave differently if a new female colleague was selected by them voluntarily without regard to gender than if "had" to select a female due to quotas" (p.2). Moreover he suggests that more studies

should explore whether differences exist between boards that early adopt gender policies (substantively) and boards that late follow this behaviour (symbolically).

On the dark side of gender quotas, much research has made negative claims about the adoption of mandatory regulation for gender diversity on boards. First, gender quotas might be perceived as an improper intervention into the private property right, they could represent a discrimination against other minorities that are not equally protected (such as ethnic minorities), and they might lead to the appointment of women without appropriate competence (Huse and Seierstad, 2014; Terjesen *et al.*, 2014). Second, since women are more likely to sit in monitoring committees, mandatory quotas can reduce the value of well-governed firms, where over monitoring is counterproductive (Adams and Ferreira, 2009). Third, a number of scholars have documented the negative effects of the introduction of quota law in Norway. Ahern and Dittmar (2012) have reported that the announcement of gender quota in Norway has caused negative market reactions, with serious drop in the stock price. By using financial data for publicly listed firms, Matsa and Miller (2013) have found that firms affected by the quota experienced a decline in short-term profits. Moreover, about 50 percent of the firms exposed to the Norwegian legislative measure, have changed their organizational form to avoid legal requirements (Bøhren and Staubo, 2014).

Overall, the ambiguity of research concerning the impact of gender quotas has led some scholars to question its plausibility. In his recent commentary, Ferreira (2015) discusses five difficulties to use the experience of Norway in that sense: 1) timing; 2) choice of control group; 3) sample selection; 4) other contemporaneous governance-related reforms; 5) different explanations of the causal mechanism that link quotas to firm performance. For these reasons, the debate about gender quotas has become rather controversial and maybe it requires some changes in the rationales underlying the enactment of mandatory gender policies.

1.2.3 Rationales and antecedents

The most common argument used by politicians and academics to support the adoption of affirmative action policies, such as quotas, is the utility of gender diversity on boards. On the one hand, utility justifications include human capital arguments, which assert the importance of women capacity and competence for boards of directors (Seierstad, 2015). On the other hand, they mainly refer to the "business case" for female directorship (Seierstad, 2015). The latter rationale pays attention on the economic utility of gender diversity from a macro-economic perspective, in terms of higher and sustainable economic growth, as well as from a micro-economic perspective, in terms of improved firm performance, better decision-making on boards, or better use of the talent pool (European Commission, 2012a). Indeed, the business case for women on boards usually consists of citing research showing a positive relationship between female board representation and firm performance (Ferreira, 2015).

Conversely, individual and social justice rationales offer different perspectives to support affirmative action policies (Seierstad, 2015). Whilst the former refers to the protection of the individuals, for example according to principles of equal treatment and non-discrimination, the latter concerns the promotion of equality in society (Seierstad, 2015). Although the profound social nature of women on boards suits well with these tenets, the debates about gender quotas have especially delved into the business case, neglecting the importance of social justice rationales. Moreover, as noted by Huse (2013), the economic arguments to support affirmative action are often used when social reasons are not accepted. This circumstance confirms a sort of presumption of mutual exclusion between these rationales. However, the need and the importance of integrate them is now being recognized (e.g. Seierstad, 2015; Ferreira, 2015).

Another important justification for gender quotas on boards is that they can support the increase of women in business, by affecting their career decisions. This tenet has been taken by some scholars (e.g., Pande and Ford, 2011; Chang, 2000), but there is no empirical evidence to that effect, and it remains rather unclear "why the board is the place to start policies that aim to promote better female representation in business" (Ferreira, 2015, p. 3). On the same wake, considering that the list of barrier for women directors is similar to the list for female workers, Adams and Kirchmaier (2013) wonder why affirmative action policies should target just boards of directors and whether they can be effective on their own. In their word, "If the costs of managing work-life balance are important deterrents to female representation in management, a more effective policy might target those costs directly" (Adams and Kirchmaier, p. 3). For instance, Bergstø (2013) suggests that mandatory action at the board level should be integrated by other interventions that foster work-life balance, one of the main barriers for women's career advancement.

To this regard, a key aspect to be underlined concerns the costs of affirmative action policies. It is reasonable that gender quotas are considered zero-cost policies for nations (Brogi, 2013) compared to the implementation of "substantive benefits", such as welfare policies, childcare services or work-life balance interventions. However, the "negative" literature about gender quotas on boards reveals that many other costs may occur at firm level, in term of drop in the stock price, reduced firm value or worse organizational performance (e.g., Ahern and Dittmar, 2012; Bøhren and Staubo, 2014; Matsa and Miller, 2013). They are rather heavy costs, and therefore they should be recognized as such when it comes to gender quotas. To date, although many studies have supported the positive linkage between women on boards and firm performance (e.g., Carter *et al.*, 2003; Campbell and Mìnguez-Vera, 2008; Campbell and Minguez-Vera, 2010; Dezsö and Ross, 2012; Huse and Solberg, 2006; Nguyen and Faff, 2012; Torchia *et al.*, 2011), contrasting evidence has led to be sceptical about the business case approach. Commenting this state of art, Ferreira (2015) asserts, "[...] current research does not really support a business case for board gender quotas. But it does not

provide a case against quotas either", and that "When discussing policies that promote women in business, it is better to focus on potential benefits to society that go far beyond narrow measures of firm profitability" (p.3). Concerning this observation, several scholars have challenged the business case for women on boards by questioning the causal mechanisms underlying the relation between female representation on boards and firm performance. For instance, the negative association detected by Bøhren and Strøm (2010) has suggested that there is "no convincing economic reason for requiring by law or code that a minimum fraction of the firm's directors [...] be of a certain gender [...]" (p. 1305). By discussing the negative impact of gender quotas in Norway, Matsa and Miller (2013) conjecture that it may depend on the institutional setting of nations, in terms of economic, social and cultural context, and that the detected effects could be larger in other countries, with more traditional gender roles or less commitment to gender equality in public debates. Indeed, while laws and regulatory provisions can protect women from formal discrimination and stereotypes from the top (Brogi, 2013), they cannot do the same with institutionalized social practices, equally discriminatory, but in a non-apparent way. Therefore, they can fail to change cultural attitudes that continue to affect women lifecycle from the bottom, in society, in family and at work. For instance, Adams and Kirchmaier (2013) argue that if gender quotas contribute to reinforce gendered or negative attitudes towards women, as documented in several studies, they cannot be very effective.

Taken together, these concerns implicitly raise two key questions: why should Norway be the norm? In addition, should other countries follow its example? (Huse and Seierstad, 2014). In order to find possible answers, it is important to better understand the underlying causes of female underrepresentation on board rather than or before claiming the necessity of gender quotas or target in the boardroom (Adams and Kirchmaier, 2013). At the same time, we need to explore the institutional and historical context where gender quotas should take place, as well as the enactment of other public policies aimed to increase the number of women on boards (Huse and Seierstad, 2014).

The research about the antecedents of both adoption and diffusion of quotas law offers some keys of interpretation to that end. Teigen (2012) analyzes the spread of quota legislation for corporate boards according to the mechanisms of diffusion, path dependency and critical junctures. By exploring the complexities of factors that have led to the diffusion of quotas law, she offers several contributions. First, the "follow-the-leader" mechanism has had an important role in such spread. Since Norway was characterized by fortunate critical junctures (in terms of both financial and gender equality success), the quotas law has get satisfying results. Therefore, Teigen (2012) concludes that other countries with similar junctures can well perform with a quota law. In doing so, the diffusion of gender quotas for boards of directors has followed a regional pattern, by starting from Iceland and including Western Europe countries. Finally, a considerable part of the diffusion of quotas legislation is connected to national

factors, such as the presence of gender quotas in politics that are considered "a necessary albeit not sufficient condition" (Teigen, 2012, p. 141). To this regard, the recent work of Terjesen *et al*. (2014) suggests that there are three institutional factors consistent with the enactment of gender quotas for boards of directors. They are: 1) female employment and gendered welfare state policies; 2) left-leaning governments; and 3) a legacy of path-dependent initiatives for gender equality in both politics and businesses. The natural consequence of such evidence is that the implementation of gender quotas legislation may be most successful when they are enacted in countries with those institutional characteristics (Terjesen *et al*., 2014). Beyond institutional factors, also actors and processes have had a role in driving affirmative action policies for gender diversity on boards. Seierstad *et al.* (2015) discuss these arguments. Among the others, international and transnational actors have been key actors for supporting quota legislation. The most apparent case is Germany, where the EU pressure has dramatically influenced the (controversial) debate about quotas, until to their enactment on May 2015 (Seierstad *et al*., 2015).

1.3 The role of institutions: emerging interdependencies and increasing complexity

Institutions play a key role in shaping the representation of women on boards, as well as the adoption and diffusion of gender quotas regulation. Exploring national institutional contexts is very important to understand the different performance across countries, in terms of both the number of women on boards, and the variety of gender policies for boards of directors. Indeed, such divergence may depend on differences in cultural, economic, and regulatory environments (Kang *et al*., 2007). Given the lack of contributions to that effect, several scholars have called for further investigation in comparative and country-level research concerning gender diversity on boards (Adams *et al*., 2015; Terjesen *et al*., 2009). To date, just a small number of studies have answered this inquiry of investigation (e.g., Adams and Kirchmaier, 2013; De Anca, 2008; Grosvold, 2011; Grosvold and Brammer, 2011; Terjesen and Singh, 2008), making this stream of research still infant.

To summarize, three main institutional domains appear to have a noticeable influence on female representation on boards. They are welfare, labour and cultural institutions (see § 1.1.3). In detail, countries with generous welfare states, such as countries with French and Germanic legal heritage, present a small number of women on boards (Grosvold and Brammer, 2011). Moreover, systematic evidence supports the influence of labour institutions in shaping female representation on boards. To this regard, extant comparative research presents two main contributions. On the one hand, the presence of more women in senior management positions and less gender pay gap leads countries to perform better in terms of women on boards (Terjesen and Singh, 2008). On the other hand, full-time female labour force participation is positively related to the number of women in the boardroom (Adams and Kirchmaier, 2013). This

means that in order to reach board positions, women need to stay at work. However, "full-time employment may be not sufficient" (Adams *et al.*, 2015:80), because the presence of cultural barriers may affect women's career advancement and other public policies program may be necessary to promote work-life balance (Adams and Kirchmaier, 2013). Clearly, the underlying rationale is that a full presence of women in the labour market allows them to acquire the appropriate competences and experiences to gain board positions. Looking at national culture, empirical evidence shows that cultural institutions are significantly related to female representation on boards (Adams and Kirchmaier, 2013) and that countries with lower levels of gender differentiation (i.e., Nordic European and Eastern European culture-oriented countries) have a higher number of women on boards (Grosvold and Brammer, 2011).

Interestingly, a long tradition of studies in law, management, sociology, and psychology research have offered systematic support for the close interconnection between welfare, labour and cultural institutions. Such interdependence is supported by a number of sociological theories addressing the effects of institutions on the life courses of the individuals. Looking at cross-national differences, sociologists argue that individual lives outcomes and institutional configurations co-vary, because life courses are shaped by institutions (Mayer, 2009). The sociological perspective attributes the greatest share of the variance in individual life courses to three institutional factors: 1) the division of labour, which shapes external social structures; 2) the division of labour within households; and 3) the state intervention through welfare policies (Mayer, 2009). In detail, Mayer (2009) describes the consequences of four institutional configurations (i.e., the liberal market societies, the Scandinavian social democratic welfare states, the continental conservative welfare societies, and the *familistic* residual welfare states of the southern Europe) on nine aspects of the predominant life course regimes, including the degree of career involvement of women. Overall, this study reveals that the different characteristics in welfare, family and labour institutions have a relevant influence on female life courses, especially with regard to their career.

In general, welfare states, intended as "the set of social assistance and social insurance programs, universal citizenship entitlements, and public services", are acknowledged to shape gender relations (Orloff, 1996, p. 52), for example through the sexual division of caretaking and domestic labour (Orloff, 1993). In turn, gender relations themselves contribute to shape the nature of welfare states. In this way, gender relations and welfare states mutually influence each other (Orloff, 1996). Interconnections also occur between welfare institutions and labour environments. Welfare states affect the promotion of equal opportunities (e.g., Esping-Andersen, 1990, 1999; Grosvold and Brammer, 2011; Mandel and Semyonov, 2006; Misra and Moller, 2005), especially the participation of women in the labour market (e.g. Esping-Andersen, 1990; Mandel and Semyonov, 2006). However, despite higher level of social and family policies are linked with higher level of female employment (e.g., Esping-

Andersen, 1999), the effects of institutional welfare provisions seem to be rather ambiguous with regard to female managerial positions. For instance, Mandel and Semyonov (2006) find that welfare provisions promote female employment, but not into powerful and desirable positions. As a consequence, the presence of women in managerial occupations may be very low. The aforementioned authors insert this issue into the "welfare state paradox", since "the same welfare state activities that promote one dimension of gender equality appear to inhibit another dimension" (Mandel and Semyonov, 2006, p. 1942). In a similar vein, "welfare state affects gender inequality within higher classes (managers) mainly through the potential for *defamilialization* to block women's attainments" (Mandel and Shalev, 2009:1901). In line with Esping-Andersen's definition, the *defamilialization* role of states refers to the public support offered for working mothers, such as paid maternity leave or reduced working hours. Unfortunately, this support unbinds mothers from employment, but it fails to liberate women from family's responsibilities (Misra and Moller, 2005), affirming their dominant role in childcare, eldercare and housework.

Finally, a number of scholars emphasize the relevant influence of social prescriptive norms, gender stereotypes and gender schemas on female career advancements, as well as on female representation on boards (e.g., Adams and Kirchmaier, 2013; Nelson and Levesque, 2007; Terjesen *et al.*, 2009; Terjesen *et al.*, 2014; Swiss and Walker, 1993; Williams, 2000)[27]. Common examples are the asymmetry in marital roles (Pearson and Bales, 1955), the "breadwinner" and "caregiver" stereotypes, the dichotomy between the prescriptive norms of "ideal worker" and "ideal mother" (Williams, 2003).

Clearly, a direct influence on female representation on boards stems from gender quotas policies. The comparative research about the adoption of gender quotas for boards of directors has reported similar institutional interdependencies. Teigen (2012) mentions the existence of distinctive critical junctures that were important for the success of quotas law in Norway, suggesting that countries with similar characteristics could achieve better results with gender quotas, just as Norway did. In a similar vein, Terjesen *et al*. (2014) propose the adoption of gender quotas in terms of national coherence between three particular institutional factors[27], concluding that the more the countries present those institutional characteristics, the better the performance of gender quotas. This claim is well suited with the assumption that gender quotas are not sufficient on their own to achieve a higher number of women on boards, but they require be integrated or complemented by other interventions, such as work-life balance policies (Adams and Kirchmaier, 2013; Bergstø, 2013). On the contrary, other research supports the supplementary function of gender quotas. For instance, Grosvold and

---

[27] See § 1.1.3 (§ *Career advancement*) for detailed description.

Brammer (2011) assert that affirmative action policies for gender diversity on boards of directors should be taken when the cultural heritages of nations are very slow to change. In this way, gender quotas should make up for the deficiencies of other institutions (in line with the definition of supplementary institutions provided by Crouch, 2005).

1.3.1 Research agenda

The arguments reviewed suggest that welfare states, labour institutions, national cultures, and regulatory policies for boards of directors are not independent from each other, but they appear to be closely intertwined. This means that gender diversity on boards of directors may result from multiple interconnections between complementary institutions. Although corporate governance research contributed to uncover that female representation in the boardrooms goes through the role of women in welfare states, national culture and in occupational environments, it almost neglected a further step in exploring the influence of national configurations on gender diversity on boards. It concerns the existence of institutional interdependencies, emerged in parallel streams of research, but until now not explicitly called into question in studies of board composition.

This state of art reveals that extant literature on women on boards is limited in several ways. On the one hand, prior research has highlighted the influence of welfare institutions, occupational segregation, and cultural dispositions, on female representation on board (e.g.., Adams and Kirchmaier, 2013; Grosvold and Brammer, 2011; Nelson and Levesque, 2007), but it has lacked to investigate the joint influence that such institutions can have on gender diversity on boards of directors. In doing so, these studies have left unexplored the causal mechanisms underlying the relationships between the mentioned institutional sets. In the lack of holistic approaches, it remains rather unclear why, whether, how and which institutional condition are in *conjunctural* causality with female representation on boards. Moreover, the institutional research on women on boards has been dominated by descriptive studies (Seierstad *et al*., 2015), with very few theoretical developments (Terjesen *et al.*, 2009). Clearly, investigating the existence of institutional complementarities requires acknowledging the interrelationships among several theories, just as suggested by Terjesen *et al.* (2009). Unfortunately, to date no research has delved into this complexity.

On the other hand, the inconsistency of the results related to the effects of gender diversity and gender quotas on performance (see § 1.1.2 and § 1.2.2), has led scholars to question the business case for women on boards. The recent shift towards social justice arguments has moved the attention to explore "why are there relatively few women on boards?" (Adams *et al*., 2015, p. 80). The opinion is that understanding causes and antecedents of female underrepresentation on boards allows for designing measures of intervention that are more appropriate and may include not necessarily mandatory quotas. Surprisingly, very few studies have deepened the relations between national

institutional factors and the use of public policies (Seierstad *et al.*, 2015), usually resulting in two separated streams of research. On the contrary, existing national configurations really matter for the introduction of new affirmative action policies. When a new regulatory policy or institution is enacted into a given national system, it may fail to gain the expected objectives, because the synergic effect of complementarities between the other institutions might lock or delay the aimed change (in line with Deeg, 2007). Therefore, it is still vague whether gender quotas regulation may be sufficient on its own to pursue a higher level of female representation on boards (as questioned by Adams and Kirchmaier, 2013), and what role it plays in the existing national institutional systems (are gender quotas complements or substitutes?).

The aim of this thesis is, therefore, to answer the following research questions:

RQ1: Why and how are certain institutional domains causally and jointly related to women on boards?

RQ2: Are there complementarities between these institutional domains?

RQ3: What type of *complementarity* is it? Are they synergic or substitutes?

RQ4: Which conditions in each institutional domain are in *conjunctural* causality with the representation of women on boards?

RQ5: Which combinations of country-level conditions lead to a higher number of women on boards?

RQ6: What is the role of gender quotas for boards of directors in the existing national configurations? Are they necessary and/or sufficient conditions to achieve a higher number of women on boards?

By filling these gaps in the literature, this work address the importance of institutional interdependencies for designing national policies aimed to promote female representation on boards. It acknowledges the existence of complementarities between certain institutional domains, theoretically informing their "gendered" structure. Delving into the complexity of the subject under investigation, this analysis elects, for each institutional domain, the main causal conditions that are likely to affect the number of women on boards of directors. Furthermore, it empirically explores their *conjunctural* causality and synergic effects in order to investigate if a "superior" national model for female representation on boards exists across EU countries.

The next chapter adopts a multiple theoretical lens, by integrating institutional complementarities theory, *configurational* theory and set theory. The aim is to provide a comprehensive conceptual framework that takes into account the interrelated forces between regulatory policies, and welfare, labour and cultural institutions that influence women success. Acknowledging these interrelationships is important to:

1) assess the necessity and sufficiency of certain country-level conditions to achieve a higher number of women on boards of directors;

2) explain the differences across countries in terms of female representation on boards and their different approaches to the adoption of gender regulatory policies; and

3) investigate the necessity and sufficiency of gender quotas according to the characteristics of the existing national configurations.

CHAPTER SUMMARY

This chapter has addressed several objectives. First, it aimed to offer a detailed analysis of extant research about gender diversity on boards, by articulating the review of the literature according to two mainstreams: 1) characteristics, impact, rationales, and antecedents of women on boards; and 2) forms, impact, rationales and antecedents of gender regulatory policies for boards of directors. Second, it has presented the results of a deepened documentary analysis aimed to classify the variety of forms of regulation for gender diversity on boards across countries. In this way, a systematic review of the main legal texts, corporate governance codes, national legislations, and EU official documents has been provided. Third, it has identified specific research areas that need to be further theoretically and empirically investigated, by developing a research agenda to that end.

By focusing on the institutional research on women on boards, it has revealed that, although previous studies supported the (individual) influence of regulatory policies, welfare, labour and cultural institutions on women on boards, they neglected the existence of interdependencies and latent complementarities between them. This means that gender diversity on boards of directors may result from multiple interconnections between complementary institutions. Unfortunately, in the lack of holistic approaches, it remains rather unclear why, whether, how and which institutional condition are in conjunctural causality with female representation on boards. Moreover, despite the importance of understanding institutional antecedents of female underrepresentation on boards for designing public policies that are more appropriate to promote gender diversity in boardrooms, these two streams of research appear rather separated in corporate governance literature. This state of the art suggests the need for integrating such aspects in a comprehensive and unique theoretical framework, as well as the need for assessing the actual necessity and/or sufficiency of gender quotas policies according to the existing national configurations. Since the enactment of gender quotas for corporate boards may have ambiguous effects on firm performances (as shown by several studies), these aspects need a deeper investigation. Indeed, existing national configurations really matter for the introduction of new affirmative action policies. When a new regulatory policy or institution is enacted into a given national system, it may fail to gain the expected objectives, because of the synergic effect of complementarities. Therefore, it is still vague whether gender quotas regulation may be sufficient on its own to pursue a higher level of female representation on boards and what role it plays in the existing national institutional systems (are gender quotas complements or substitutes?). Filling these gaps may contribute to advance theory in studies of corporate governance and to better inform policy aimed at the promotion of gender diversity on boards.

CHAPTER 2 THEORIES AND PROPOSITIONS

OVERVIEW: The existence of complementarities and joint causal effects between different institutional domains needs to be theoretically informed and empirically verified. In order to accomplish this twofold aim, this chapter adopts a multiple theoretical lens, by integrating institutional complementarities theory, *configurational* theory and set theory. It theoretically argues the existence of complementarities between welfare, labour and cultural institutions according to their "gendered" structure. The logic of set-theory and the assumption of causal complexity inform the development of propositions, which assume, in line with the configurational theory, the existence of two *equifinal* and mutually non-exclusive bundles of causal conditions that can lead to a higher number of women on boards.

2.1 Research rationale

The representation of women on boards appears to be the height of deeper social issues. It evokes a problem of gender equality in terms of access to opportunities and distribution of power in societies. If this subject is understood as such, women on boards cannot be separated from the role of women in family, labour, welfare and cultural institutions. The underlying rationale is that gender relations shape certain institutional domains because gender itself is an institution embedded in other institutions (Martin, 2004; Terjesen *et al.*, 2009). According to Martin (2004), if gender is conceptualized as social institution, we can: 1) make it more visible and more susceptible to change by human agency; 2) assume its interdependence with others institutions, such as family, labour market, laws and welfare; 3) recognize that States have power over others institutions as well as gender institution. Such an approach increases the complexity of the matter under investigation, since it places women on boards at a crossroads of theories. At the same time, it paves the way for responding to several calls within corporate governance research, suggesting the need for acknowledging the interrelations between theories (Terjesen *et al*., 2009), as well as the importance of adopting multiple theoretical lenses, such as institutional theories (Adams *et al*., 2015). The present study embraces this inquiry of research.

The interdependence of institutions requires adopting a holistic approach to the understanding of female representation on boards. In doing so, this study assumes that women on boards are the outcome of multiple relations between different institutional sets, whose conditions influence the "gendered" nature and structure of institutions themselves. The presence of similar gendered structures within each institutional

domain may generate strong complementarities, which in turn may determine synergic effects on a given national outcome (women on boards). This research draws on *institutional complementarities theory* to support these arguments.

Implicitly, referring to the existence of complementarities underlies a causal mechanism between institutions, because complementarities imply that the effect of one institution depends on the presence or absence of another (complementary) institution. It also requires understanding which country-level conditions, within each institutional domain, are responsible for these joined causal relationships. This means that country-level conditions can combine in different ways, by generating several national configurations. Analyzing such configurations may result in different conjunctions or combinations of causal conditions (*conjunctural causality*) that can equally lead to the outcome, i.e. a higher number of women on boards of directors (*equifinality*). The corresponding insights may be relevant to assess whether or not there is a superior national model for female representation on boards, as well as to evaluate the role of gender quotas policies within the existing national configurations. For this reason, assumptions of *configurational theory* also inform this study.

Finally, beyond theoretical justifications, both complementarities and *conjunctural* causality need empirical verifications. However, exploring *conjunctural* causality and joint effect poses a methodological challenge (Jackson and Ni, 2013). To this regard, set-theoretic methods are particularly useful to study women on boards in terms of relations between institutional sets. They allow for assessing the effects of country-level causal conditions on women on boards, through the analysis of (individual and combined) sufficiency and necessity of such conditions. The notions of *set theory* are included in this research in order to empirically explore theoretical propositions, and to articulate them according to set-theoretic notations, such as the logical operators AND (*) and OR (+).

2.2 Conceptual foundations for research

The following sections detail the assumptions of three theories involved in this work. They emphasize the *configurational* nature of complementarities (Jackson and Ni, 2013) and the use of set-theoretic approaches to explore combinatory effects and *equifinality* in national configurations. The aim is to develop explicit theoretical arguments that link women on boards to a bundle of multiple interconnected institutions and to argue the consequences in terms of necessity and sufficiency of gender quotas for boards of directors. This is followed by the development of theoretical propositions.

2.2.1 Institutional Complementarities Theory

According to Institutional Theory, a number of formal and informal constraints influences economic activities, organizational structure and human behaviours (North,

1990). For instance, laws and constitutions limit individual action in a formal way, while institutionalized taboos, traditions and socio-cultural norms do it informally. As stated by North (1990), institutions have been created to give order and stability. In doing so, they "shape the interactions of human beings, in part by helping them to form expectations of what other people will do" (Nugent e Lin, 1995:2037). Therefore, in their regulatory function of society, institutions provide opportunities and limitations. By defining institutions as "systems of social beliefs and socially organized practices associated with varying functional arenas within social systems" (Scott, 1987:499), Scott presents an interesting theoretical framework, according to which institutional theory is based on three pillars. They are regulative, normative and cultural-cognitive structures (Scott, 1995). On the one hand, the regulative pillar underlies the economic perspective on institutional theory and it reflects the attention to laws and formal rules in shaping individual and organizational behaviours. On the other hand, based on the sociological perspective, the normative and cultural cognitive pillars help to explain the influence of culture, values and social norms on behaviours (Scott, 1995). Grosvold (2011) has applied this framework in studies of gender diversity on boards, contending that regulative, normative, and cultural-cognitive pillars strongly affect the prevalence of women on the board.

Looking at cross-national differences, a vigorous tradition in economic research underlines the "bundled" nature of institutions within national systems, to the extent that any institution "fits into a system of institutions" (Neale, 1988, p. 245). The diversity of institutional systems and the overall coherence of a "national model" can be explained by the co-existence of interdependent and interacting institutions that reinforce each other and create a coherent and stable structure (Amable, 2000). The effects of this interdependence play a role in determining differences in national outcomes and imply the presence of multiple *equilibria* concerning the economic outcomes of nations (Aoki, 2001; Ahlering and Deakin, 2007). Moreover, institutions co-evolve by developing mutually reinforcing characters. In this way, they make national institutional systems particularly resistant to change (e.g., Aoki, 2001, Amable, 2003; Jackson and Deeg, 2008; North, 1991). Taken together, these arguments have spread in comparative capitalism literature under the theory of institutional complementarities.

Defining institutional complementarities. The concept of complementarities roots on organizational research (Jackson and Ni, 2013). When investigating the configurations of both old and modern manufacturing firms, Milgrom and Roberts (1995) find that they are characterized by patterns of mutually complementary features. In their word, "high levels of flexibility ought to be associated with broad product lines, and inflexible

production technologies with limited product variety. Both constitute coherent patterns, and either can be successful and, indeed, optimal in the appropriate environment" (Milgrom and Roberts, 1995, p. 193). Through the formal notion of complementarities[28], they substantiate the concepts of "fit" and "synergies" between strategies and structures of organizations. They argue that adopting bundle of complementary practices lead to better results, compared with the adoption of a single practice.

In line with these tenets, institutional *complementarity* can be defined as "the interactions between the influences that different institutions have on agents' behaviour" (Amable *et al.*, 2005: 313). In functional terms, institutional complementarity stems from the circumstance that the functional performance of an institution depends on the presence of another institution (Höpner, 2005a). Since complementary institutions exert a joint influence, the conjunction of two or more institutions may enhance the performance of a social and economic actor, such as organizations or national economies (Deeg, 2007). With regard to the definition of institutional complementarity, three aspects need to be underlined.

The first is that institutional complementarities represent one type of the possible linkages between institutions (Boyer, 2005; Höpner, 2005b) and they quite diverge from the notions of institutional coherence[29], institutional compatibility[30] and institutional clustering[31] (Deeg, 2007). Thus, the presence of the latter does not imply necessarily a case of institutional complementarities, because "complementarity is a causal effect or outcome" that need to be measured and empirically verified (Deeg, 2007, p. 614).

The second aspect to be noted refers to the specification of two main different definitions of institutional complementarity. Amable *et al.* (2005) assert that, on the one hand, institutional complementarities can be defined according to measures of performance, since complementary institutions are likely to push national economies towards a local optimum. Amable *et al.* (2005, p. 317), formally articulate this notion of institutional complementarities as follows:

---

[28] Milgrom and Roberts (1995) adopt a formal mathematical approach based on the definition of "Edgeworth complements", activities are complementary "if doing (more of) any one of them increases the returns to doing (more of) the others" (Milgrom and Roberts, 1995, page 191).

[29] According to Deeg (2007, p. 613), "institutional coherence refers to a situation in which institution share common or identical principles, which may facilitate interaction among actors operating under them (i.e. institutional isomorphism)". Consequently, the presence of coherence does not imply *complementarity* and enhances effects on performance, just as the presence of incoherence between institutions does not mean that institutions are linked by *supplementarity*.

[30] Institutional compatibility refers to a situation of stability between institution, without the existence of coherence or complementarity, hence having no valuable effects on performance (Deeg, 2007).

[31] Institutional clustering refers to the presence of two or more institutions frequently observed together across nations (Deeg, 2007). According to Höpner (2005b, p. 334), "clusters is an indication for compatibility, but no proof of complementarity", because they stem not always from functional reasons, but for instance from the existence of similar cultural arrangements across nations.

Formula 2.2.1 - First notion of institutional complementarity

$$A \; compl_\Omega \; B \quad iff \; \Omega_{AB} > \Omega_{A'B} \; and \; \Omega_{AB} > \Omega_{AB'}$$

where **Ω** refers to a measure of performance related to the interaction of two different institutional domains, while A and A' represent two institution forms available for the first domain, as well as B and B' two institution forms available for the second domain[32] (Amable *et al*., 2005). On the other hand, institutional complementarities may imply a form of dynamic stability, since the presence of an institution simply reinforces the existence of another, without reference to performance effects. This means that the presence of an institution A implies the presence of the institution B (Amable *et al*., 2005). More formally, Amable *et al*. (2005, p. 318) have expressed this dynamic notion of complementarities as follows:

Formula 2.2.2 - Second notion of institutional complementarity

$$A \Longrightarrow B \quad and \quad B \Longrightarrow A$$

Finally, a third aspect regards the existence of two essential logics embedded in the notion of institutional complementarities.

A first logic is synergy: two or more institutions, which are aligned and organized around common principles, show mutually reinforcing effects on a given outcome (Campbell, 2011). These synergic effects stem from a sort of similarity between institutions (Crouch, 2005), which reinforce similar and compatible incentive structures in different institutional subsystems (Deeg, 2007). In general, the varieties of capitalism (VOC) literature relies on the logic of similarity to establish institutional complementarities (e.g., Molina and Rodhes, 2007; Jackson and Deeg, 2008). The underlying principle is that complementarity stems from similar properties or incentive structures that make co-existent institutions more aligned and mutually reinforced (Campbell, 2011). Thus, national systems are usually classified in categories or typologies of complementary institutions, such as liberal market economies (LMEs) or coordinated market economies (CMEs), common or civil law countries, welfare or market states. For instance, the presence of several aligned institutions enhances market competition in LMs, while institutions in CMs typically encourage cooperation (Campbell, 2011).

A second logic is *supplementarity*: two or more institutions with contrasting properties complement each other, because one compensates for the deficiencies of the

---

[32] See Amable *et al.* (2005) for detailed explanation.

other (Crouch, 2005). Therefore, the logic of contrast implies a form of compensation between institutions. To this regard, emblematic is the example of Denmark, where *flexicurity* institutions in the labour market are compensated by the presence of contrasting institutions, such as generous welfare states, and vigorous training and job relocation programmes (Campbell, 2011).

Assessing institutional complementarities. Beyond definitions, assessing the existence and the strength of institutional complementarities is important to unravel the causal mechanisms that link interrelated institutions to an outcome (Deeg, 2007). To this regard, several levels of analysis need to be taken into account. According to Höpner (2005b), to study complementarities requires specifying performance criteria and perspectives. Indeed, the existence of institutional complementarities can be assessed with regard to overall macroeconomic performance or by referring to the welfare of particular groups in society (Höpner, 2005b). Moreover, institutional complementarities that enhance a given outcome (e.g., firm profitability) might have opposite effects with regard to the others (e.g., employees' satisfaction). For these reasons, "complementarities must be understood locally in relation to a particular model or outcome of interest, whereby it is difficult to extrapolate a global view of whether two elements are in a positive equilibrium" (Jackson and Ni, 2013, p. 136).

Deeg (2007) suggests two further step of analysis. The first level consists in evaluating the relative importance of complementarities created between different sets of institutional domains. This means that it is necessary to assess which institutional complementarities, among all the other conceivable, are more important for a given national outcome. In other words, this implies to elect those institutional domains, whose complementarities contribute more to the outcome than complementarities between other institutional domains. The second level of analysis concerns the relative significance, within each institutional domain, of specific institutions that are likely to generate complementarities with other institutional domains. Assessing such significance essentially consists in identifying, for a certain institutional domain (e.g. welfare states), those institutions (e.g., parental leave, childcare services) that generate complementarities with institutional attributes (e.g., female employment) of other domains (e.g. labour institutions). Clearly, these institutions can combine in different way, providing a wide range of combinations of complementary institutions (Deeg, 2007). In other words, they can be complements or substitutes within a given national configuration, hence showing multiple *equilibria* with regard to the same national outcome (Aoki, 2001; Deeg, 2007). The assumption that different combinations of institutional characteristics can equally lead to the same outcome is related to the concept of *equifinality*, thus unravelling "the configurational nature of complementarities" (Jackson and Ni, 2013, p. 131), and posing several methodological

challenges "in understanding complementarities as specific types of configurations associated with positive effects" (Jackson and Ni, 2013, p. 136).

2.2.2 Configurational Theory

The concept of configuration refers to "any multidimensional constellation of conceptually distinct characteristics that commonly occur together. Numerous dimensions of environments, industries, technologies, strategies, structures, cultures, ideologies, groups, members, processes, practices, beliefs and outcomes have been said to cluster into configurations, archetypes or gestalts" (Meyer *et al*., 1993, p. 1175). Configurations are conceived as a whole, instead of a collection of elements (Fiss *et al*., 2013). Accordingly, the essential assumption of configurational theory is that each element of an organization can be better understood by referring to the whole configuration (Miller and Friesen, 1984). This implies the adoption of a holistic principle of inquiry "aiming to identify configurations, or unique patterns of factors, that are posited to be maximally effective" (Delery and Doty, 1996, p. 808). To that effect, configurations represent theoretically-construed ideal types, intended as unique combinations of factors that are relevant for an outcome (Doty and Glick, 1994). The bureaucratic ideal-type designed by Weber can be considered as the forerunner of "ideal-type or typological configurationism" (Grandori and Furnari, 2013, p. 80). Interestingly, configurational theorizing is intimately characterized by "logic of consistency" to the extent that all elements of a configuration are viewed as equally important for its existence and/or its effectiveness (Fiss *et al*., 2013). In this way, ideal types show some traits that are predicted to be effective for the outcome and when configurations deviate from ideal types, their performance is expected to be lower (Doty *et al*., 1993). Indeed, configurations or typologies are based on the notion of *fit* among the different factors that constitute the whole (Fiss, 2011). While contingency theories assert the importance of the external fit (see for example, to enhance business performance, a *configurational fit* requires a high consistency among multiple set of elements, both internal and external to organizations (Soda and Furnari, 2012).

The most important application of configurational approach in organizational research has been made in exploring the linkages between bundles of organizational factors (context, structure, strategy and practices) with a given outcome of interest. Indeed, configurational arguments "acknowledge the complex and interrelated nature of organizations, in which fit and competitive advantage frequently rest not on a single attribute but instead on the relationships and complementarities between multiple characteristics" (Fiss, 2011, p. 393). Configurations generally exhibit synergies and their relationships tend to produce synergistic effects on the outcome under investigation (Delery and Doty, 1996). From this perspective, it emerges that the notion of complementarities is closely related to the configurational thinking. Indeed, complementary relationships imply causally complex configurations of multiple

elements (Jackson and Ni, 2013). Configurations and complementarities-based approaches are very attractive for research both at the organizational level, as well as at industry and national level (Fiss, 2007), because they allow scholars to explore the synergic effects that bundles of elements have in determining superior firm performance or national outcomes[33]. However, the configurational nature of complementarities increases the complexity of the subject under investigation because it give rise to some issues related to the understanding of the causal mechanisms underlying complementary relationships; to the evaluation of the joint influence of several variables on the outcome; and, to the presence of several possible combinations of elements that can equally lead to the same outcome. In other words, adopting a configurational approach assumes the presence of complex causality and nonlinear relationships that, taken together, pose some methodological challenges, since they lead to break with the linear paradigm that predominate in extant literature (Fiss, 2007).

First of all, a configurational approach implies a *conjunctural causation* (Ragin, 2000) rather than singular causation. With reference to a given outcome, conjunctural causation implies that the effect of a single variable within a configuration depend on the presence or absent of other variables. Therefore, configurations may display the combination or conjunction of a number of conditions, which are causally related the outcome. They can be intended in terms of causal configurations, whereas configurations represent the intersection of factors whose conjunction causes on outcome (Kogut *et al.*, 2004). Another important property of configurations is the nonlinearity or asymmetry of relationships between variables (Black and Boal, 1994). This statement suggests that the circumstance that variables are causally related in one configuration does not exclude that they may be unrelated or inversely related in other configurations (Meyer *et al.*, 1993). If a specific configuration is sufficient to achieve higher performance, the opposite configuration not necessary lead to low performance (Jackson and Ni, 2013). By deepening these aspects, Fiss (2011) asserts that configurations frequently show *core* conditions, that are essential elements in strong causal relationship with the outcome proffered, and *peripheral* conditions, that are exchangeable elements in a weaker relationship with the outcome of interest (e.g. high business performance). With the core-periphery view of configurations, Fiss (2011) contributes to apply the concept of *causal asymmetry* to configurational thinking. Causal asymmetry (Ragin, 2008a) represents one of the main characteristics related to the notion of causal complexity, and it implies that causal conditions that lead to the

---

[33] As noted by Jackson and Ni (2013) and Fiss (2007), a number of studies have analyzed the effects of complementarities on outcomes at several levels. For instance, complementarities have been investigated between organizational strategies and structures (e.g. Miles and Snow, 1978), among human resource management practices (e.g., Delery and Doty, 1996), and among the attributes and features of national economic systems (e.g., Aoki).

presence of a given outcome can partially differ from those that are present in the absence of the outcome (Fiss, 2011). Moreover, a configurational approach assumes the concept of *equifinality*[34] (Fiss, 2007; Payne, 2006), by considering the presence of multiple possible combinations of elements that can equally lead to the same outcome. Ragin (2000) refers to this concept as *multiple conjunctural causation*. In this way, multiple configurations can result in superior performance (Meyer *et al*., 1993). To that regard, Fiss (2011) has developed the concept of neutral permutations, by asserting that within an organizational configuration "more than one constellation of different peripheral causes may surround the core causal condition, with these permutations of peripheral elements being equally effective regarding performance" (Fiss, 2011, p. 394). At the same time configurations have the property of *structural multifinality*, to the extent that each single configuration may achieve multiple purposes and it can have multiple effects (Grandori and Furnari, 2013). For instance, a set of aligned and consistent human resource management practices may positively affect firm performance, but this does not implies that it makes up the best place to work for employees (Guest, 1997), as these practices may result in increased workload and stress for workers.

Although the assumptions of configurational theory and the properties of configurations look promising for theoretical advancements in several streams of research, a great mismatch between theory and method has limited the development of configurational approaches in extant literature (Fiss, 2007). Configurational thinking increases the complexity that theories and methods have to take into account, and this complexity "grows exponentially as more elements are added to the system" (Fiss *et al*., 2013, p. 2). This constitutes the main reason that why configurational approaches challenge the linear paradigm that is prominent in conventional statistical and correlations-based research methods (Fiss, 2007; Rihoux, 2006).

Fiss (2007, 2011) provides a deepened description of this mismatch, by comparing the most frequent research methods that are used for analyzing complexity, namely regression models, deviation scores and cluster analysis. According to the author, the configurational assumptions of nonlinearity, synergistic effects and equifinality come to diverge from the properties of linearity, additive effects and *unifinality* that are typical of econometric methods (Fiss, 2007). For instance, Delery and Doty (1996) use deviation scores for studying theoretically and a priori defined configurations, but without finding any strong support for the configurational approach. Deviation scores

---

[34] As noted by Grandori and Furnari (2013), the notion of *equifinality* has a long tradition, as it originally roots on general system theory developed by the biologist Ludwig von Bertalanffy. Kats and Kahn (1978, p. 30) refers to the notion of *equifinality* by asserting that "a system can reach the same final state from different initial conditions and by a variety of different paths". However, configurational perspective has allowed for empirical investigations about this concept (Grandori and Furnari, 2013).

calculate the difference between ideal types and real types in the sample, hence helping researchers to establish the effect of deviation from ideal type on performance (in general, lower performance), but not allowing them for understanding which factors of this divergence actually affect the outcome. Fiss (2007) suggests that this is probably due to the fact that configurations or ideal profiles are preliminarily defined according to empirically derived means scores or deviation from the mean. In doing so, they are extremely sample-dependent, rather than theory-guided (Fiss, 2007). Other studies adopt cluster analysis (e.g., Arthur, 1992; Pardo and Perlines, 2008; Bissola *et al.,* 2014) for studying configurations, and then they usually employ ANOVA for verifying differences in performance among selected clusters. Although cluster analysis is useful to determine similar characteristics among the cases under investigation, it presents some limitations. First of all, it greatly depends on the researcher's judgment about the number of clusters to be included in the analysis. Secondly, clustering mainly depends also on selected sample and variables. Finally, empirical clusters could not include those cases that have the same configuration because they differ in some characteristics. As a result, cluster analysis produces empirical groupings that often "do not reflect causal relations" (Fiss, 2007, p.1182). Moreover, Fiss (2007) shows some concerns about the use of linear regression models to investigate configurations. For instance, regression analysis does not allow the identification of several combinations of variables that can lead to an outcome. Essentially, linear regression models treat variables as competing and they estimate the contribution of a variable while holding constant all other variables in the model, rather than reveal how variables combine for determining the outcome. This leads to underestimate synergistic effects, as well as to underrate the construct of *equifinality* (Fiss, 2007), while a configurational approach aims to unravel interaction effects and complementarities that do not imply simple correlation (Fiss *et al*., 2013; Jackson and Ni, 2013). Clearly, through interaction effects it is possible to overcome this obstacle, but to interpret more than two- or three-way interactions may be very difficult, at the expense of *equifinality* (Fiss, 2007). Finally, *correlational* approaches adopt a symmetric logic that is in contrast with the assumption of causal asymmetry of the configurational perspective, i.e. the circumstance that configurations that lead to the presence of the outcome can differ from those that lead to the absence of the outcome (Fiss, 2011). For instance, correlational methods, such as probit and logit regression, estimate simultaneously the presence and the absence of a given outcome, without allowing for acknowledging which combinations of factors occur in the presence and in the absence of the outcome separately (Fiss *et al*., 2013).

In order to overcome this mismatch, the importance of new methodological approaches to manage causal complexity is now being recognized. In detail, many scholars have stressed the potential benefits of applying set-theoretic methods to develop or verify configurational theories (e.g., Fiss, 2007, 2011; Soda and Furnari, 2012; Ragin, 2009). Indeed, *equifinality*, conjunctural causation and causal asymmetry

are the main characteristics of the type of causal complexity that set-theoretic methods are able to unravel[35] (Schneider and Wagemann, 2012). Set-theoretic approaches are particularly useful to determine which combinations of variables (e.g., organizational or national attributes) can lead to an outcome of interest (e.g., firm performance or national outcomes) in a set of cases (e.g., a number of firms or countries) (Ragin, 1987). These methods are more suitable to empirically explore the assumption of causal complexity and configurational theory, rather than statistical investigation (Fiss, 2007, 2011). They study cases as configurations, by assuming the relationship among several variables in terms of set-subset relations, with notable consequences for the analysis of causally complex configurations (Fiss *et al.*, 2013). Among the others, the most widespread set-theoretic method that has been applied in political economy, management and organizational research is Qualitative Comparative Analysis (QCA). Some notable applications have been provided by Fiss (2011), Garcìa-Castro *et al.* (2013), Kogut and Ragin (2006), Grandori and Furnari (2008).

Unlike to linear algebra and calculus that characterize the mathematics of standard statistical approaches, set-theoretic methods apply several mathematical principles that make reference to the logic of propositions, the theory of sets and Boolean and fuzzy algebra (Schneider and Wagemann, 2012). The following section provides a detailed description of the basic notions and notations of set-theory and related logics.

2.2.3 Set-theory and related logics

Schneider and Wagemann (2012, p. 6) define set-theoretic methods as "*approaches to analyzing social reality in which (a) the data consists of set membership scores; (b) relations between social phenomena are modelled in terms of set relations; and (c) the results point to sufficient and necessary conditions and emphasize causal complexity in terms of INUS and SUIN causes*" (emphasis in the original). Accordingly, set-theoretic methods are based on the assumptions of the logic of propositions and set theory and they make use of Boolean algebra (Fiss, 2007; Fiss *et al.*, 2013, Scheider and Wagemann, 2012).

Set theory is the mathematical theory of sets. A set is defined as a collection of objects that are called members, or elements of the set. Two sets A and B are said to be equal if they are constituted of the same elements. In this case, they represent the same set, and it is denoted as A = B.

---

[35] However, Schneider and Wagemann (2012) underline that this definition of causal complexity is only one possible definition, because other perspectives on causal complexity exist. For further details, see Schneider and Wagemann (2012, p. 80).

Let *a* be the element of the set *A*, then *a* is a member of *A,* and it is denoted as below:

Formula 2.2.3 - Set membership

$$a \in A$$

The basic operations on sets are intersection and union. In set theory, a combination of elements is defined *intersection* (Schneider and Wagemann, 2012). Let *A* and *B* be two different sets, the intersection of *A* and *B* indicates the set of all objects that are members of both *A* and *B*. *Union* refers to the set of elements that are members of at least one set. Therefore, union of the sets *A* and *B* is the set of all elements of *A*, or *B*, or both.

Moreover, the notion of *complement* of a set *A* refers to the elements that are NOT member of A. In set theory, logical negation is generally denoted with A′ or ~*A*. As underlined by Schneider and Wagemann (2012, p. 47), "it is important to understand that the complement of set does not automatically denote the conceptual counterpart". Bearing in mind that, in social science, sets usually imply areas of inclusion and exclusion with reference to a given concept (Mahoney, 2012), set membership defines whether a case belongs to and can be described by that concept or not (Schneider and Wagemann, 2012). To that effect, let *A* be the set of tall persons, its negation (~*A*, or set of *not* tall persons) does not correspond to the set of short persons, but to the set of all other persons that are not tall. This is a particular kind of *asymmetry* related to concepts that are represented by sets: qualitative differences concerning a given concept are captured by different sets (Schneider and Wagemann, 2012).

Intersection, union and negation are all operators that produce a new set starting from existing sets (Schneider and Wagemann, 2012). In addition, there is an important relation between sets that is called *inclusion* or *subset* relation: a set *A* is a subset of a set *B* when all elements of the set *A* are also members of the set *B*. Therefore, *A* is contained in *B*, and *B* is a *superset* of *A*. There are two types of subset relation. When every element of *A* is also an element of *B*, the subset relation is denoted by A $\subseteq$ B, meaning, "*A* is a subset of *B*". In this case, *B* is a superset of *A*; this relation is denoted by *B* $\supseteq$ *A*. Conversely, if at least one element of *B* is not an element of *A*, *A* is a *proper* or *strict subset* of *B* (denoted by A $\subset$ B), as well as *B* is a *proper superset* of *A* (denoted by B $\supset$ A). However, if A is a subset of B, then B cannot be a subset of A (i.e., A $\subset$ B $\neq$ B $\subset$ A). In set-theoretic methods, it is important to understand that this relation is unidirectional and it cannot be inverted, since the *commutativity* rule is not applied to set relations (Schneider and Wagemann, 2012). Indeed, when set relations are interpreted as causal relations, this property substantiates the existence of "asymmetric causal relationships" (Schneider and Wagemann, 2012, p. 53).

Formulas from (2.2.4) to (2.2.9) synthesize all the aforementioned notations. Figures 2.1, 2.2, and 2.3 show their graphical representation through Venn diagrams.

Formula 2.2.4 – Intersection

$$A \cap B$$

Formula 2.2.5 – Union

$$A \cup B$$

Formula 2.2.6 – Inclusion (Subset relation)

$$A \subseteq B$$

Formula 2.2.7 – Inclusion (Superset relation)

$$B \supseteq A$$

Formula 2.2.8 – Inclusion (Proper subset)

$$A \subset B$$

Formula 2.2.9 – Inclusion (Proper superset)

$$B \supset A$$

**Figure 2.1 - Intersection of sets (A∩B)**
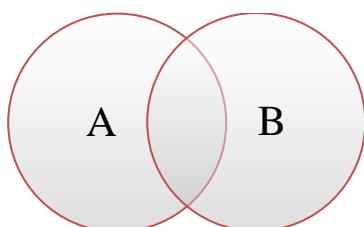

Figure 2.3 - Subset relation (A ⊂ B)
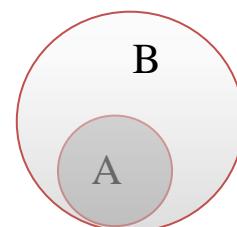
**Figure 2.2 - Union of sets (A∪B)**
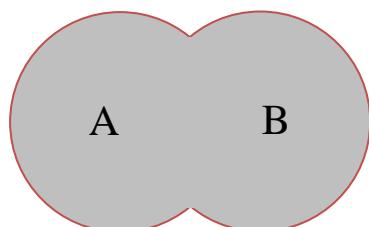
Figure 2.4 - Equal sets (A = B)
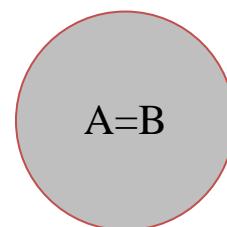
The notions involved in set theory find a correspondence with the formal logic of propositions, as well as with the notions involved in Boolean and fuzzy logics.

Propositions are defined as declarative sentences that are either true (T) or false (F). To that effect, they are defined "decidable propositions", since it is always possible to know whether they are true or false. True (T) and false (F) represent the *truth-values* of a statement. They are values that indicate the relation of a proposition to truth, and they classify a statement as true or false. Let p and q be two propositions, the logical operator *AND* stands for their conjunction (*logical product*), while the logical operator *OR* stands for their disjunction (*logical sum*). In detail, the notation $p \wedge q$ (*p AND q*) means that the logical statement is true when both p and q are true; while, it is false when at least one proposition is false. Conversely, the notation $p \vee q$ (*p OR q*) means that the logical statement is true when p is true, or q is true, or both propositions are true, because the presence of one of these propositions is sufficient to verify the disjunction[36]. At the same time, it is false only when both propositions are false.

Moreover, a proposition can be transformed into its opposite truth-value with the logical *NOT*, or n*egation*. Therefore, the negation of a logical statement corresponds to the proposition that is true when p is false and false when p is true. The notation of negation is generally $\neg p$ or $\sim p$. When both p and $\neg p$ are considered true simultaneously, there is a *logical contradiction*.

In the logic of proposition, subset relations (or inclusion) correspond to the logic of *implication*. A logical implication is the mechanism through which the truth of a proposition is transferred to other propositions (Blasi, 2006). Generally, implication is denoted by $p \Rightarrow q$ or $p \rightarrow q$[37], meaning, "*if* proposition p is true, *then* proposition q is true". However, if p is false, this does not mean that then q is false, because q might be either true or false. Since q is true if p is true, then p is defined a *sufficient condition* for q. However, if q is false, then p cannot be true, because the logical statement $p \rightarrow q$ implies that p is true, only if q is true. This means that q is a *necessary condition* for p,

---

[36] This notion of "or" corresponds to the Latin word "vel" (from which the notation $\vee$ is derived) and it indicates an inclusive "or". Conversely, an exclusive "or" corresponds to the Latin word "aut" and in formal logic it is denoted as *XOR* or *EXOR*, and by a $\oplus$ sign). In this case, the logical statement $p \oplus q$ is true when only one of the propositions is true, but not both (for details, see Blasi, 2006; Schneider and Wagemann, 2012).

[37] Generally, in this case, the relation between p and q is defined *material implication* or *material conditional*, where p is called the *antecedent* and q is called the *consequent*. When $p \rightarrow q$ is true, the truth of the antecedent p is sufficient for the truth of the consequent q, and the truth of the consequent q is necessary for the truth of the antecedent p (Stanford Encyclopaedia of Philosophy, last updated October 2011, web source: http://plato.stanford.edu/entries/necessary-sufficient/).

because q is true whenever p is true. This is denoted by $p \leftarrow q$. Therefore, the logical statement $p \rightarrow q$ is false only when p is true, but q is false.

The logical statement of implication "if...then..." cannot be inverted, i.e. $p \rightarrow q \neq q \rightarrow p$. When both these logical statements are true simultaneously, then p and q are always both true or both false. This is denoted by $p \leftrightarrow q^{38}$, meaning, "p is true if and only if q is true", and it corresponds to the logical statement: $(p \rightarrow q) \wedge (q \rightarrow p)$. Substantially, this means that p and q are logically equivalent and that p is true "if and only if" q is true. In other words, p is a *necessary and sufficient condition* for q. Conceptually, in set-theoretic terms this means that a set A, whose elements hold the property p, and a set B, whose elements show the property q, are equal, that is, they are the same set $(A = B)$.

Overall, the main notations of the logic of propositions are summarized below.

Formula 2.2.10 – Conjunction (AND)

$$p \wedge q$$

Formula 2.2.11 – Disjunction (OR)

$$p \vee q$$

Formula 2.2.12 – Negation (NOT)

$$\vdash p$$

Formula 2.2.13 – Implication (sufficiency)

$$p \rightarrow q$$

Formula 2.2.14 – Implication (necessity)

$$q \leftarrow p$$

Formula 2.2.15 – Implication (necessity and sufficiency)

$$p \leftrightarrow q$$

In general, formal logic makes use of a "truth table" to compute the truth or falsity of complex logical statements or propositions based on the truth-values of their attributes.

---

[38] In this case, the relation between p and q, is referred as a *biconditional* statement.

A truth table contains all possible combinations of simple statements (n) with two truth-values (true and false) and it is useful for determining the truth values of a compound statement. Therefore, it consists of 2^n rows. Table 2.1 shows an example of truth table in which, starting from the truth-values of p and q, the main logical operations are computed (conjunction, disjunction, negation, and implication).

Table 2.1 - Truth Table (logic of positions)

p	⌐p	q	$p \wedge q$	$p \vee q$	p→ q	p ↔ q
T	F	T	T	T	T	T
T	F	F	F	T	F	F
F	T	T	F	T	T	F
F	T	F	F	F	T	T

In Boolean algebra[39], variables can hold only two logic values, *true* and *false*, denoted by 1 (true) and 0 (false)[40]. They represent binary variables, defined as Boolean variables. Boolean algebra consists of a mathematical system of elements, operations and axioms that are useful to model logical statements and set relations. In set-theory, conventional sets are based on this logic, whereas an element is either a member of the set or not, with clear and strict membership criteria. They are called "crisp sets". Therefore, an element holds a membership value of 1 if it is a member of the set, and 0 if it is not an element of the set. Clearly, crisp sets require a dichotomisation of the concepts they represent, and they apply the "Rule of the Excluded Middle", according to which an element can be either a member of a set or a member of its complementary set, but not a member of both (Schneider and Wagemann, 2012). Later, the development of the fuzzy set theory has allowed for assigning membership values that are more gradual and that range from 0 to 1. This type of set is called "fuzzy set"[41] (Zadeh, 1965).

---

[39] This branch of mathematics roots in the seminal work of George Boole (1854)[39], whose basic assumption was that propositions could be expressed in mathematical terms, through the use of specified logical operators, that are AND (logical product), OR (logical sum) and NOT (logical negation or complement). G. Boole is considered the father of symbolic logic and binary operators. He developed an "algebra of logic" in order to compute expressions of propositional logic in mathematical terms through the combination of several terms (or propositions) through the logical operators AND, OR and NOT lead to the definition of Boolean functions.

[40] In elementary or linear algebra, the values of variables are numbers, while in Boolean algebra the values of variables are the truth-values *true* and *false*.

[41] The term "fuzzy sets" was pioneered by the seminal work "Fuzzy Sets" of Lofti Asker Zadeh (1965). In his words: "Let X be a space of points (objects), with a generic element of X denoted by x. Thus, $X = \{x\}$. A *fuzzy set* (*class*) A in X is characterized by a *membership* (*characteristic*) *function* $f_A(x)$ which associates with each point in X a real number in the interval [0, 1], with the value of $f_A(x)$ at x representing the "grade of membership" of x in A. Thus, the nearer the value of $f_A(x)$ to unity, the higher the grade of membership of x in A. When A is a set in the ordinary sense of the term, its membership function can take on only two value 0 and 1, with $f_A(x) = 1$ or 0 according as x does or does not belong to

Indeed, fuzzy set theory "was initially intended to be an extension of dual logic and/or classical set theory" (Zimmermann, 2010, p. 317). Reasonably, the "Rule of the Excluded Middle" does not hold for fuzzy sets, whereby an element can have a partial membership in both the original sets, as well as in its complementary set (Schneider and Wagemann, 2012). A membership score of 0.5 represents the cross over point, intended as point of maximum ambiguity (fuzziness) with regard to the membership of an element (or case) to the concept (Ragin, 2000, 2009; Schneider and Wagemann, 2012). It corresponds to the point of indifference of whether a case is more in or more out of a set: it is neither fully "in" nor fully "out" of the set (Ragin, 2009). Therefore, these three-value based fuzzy sets consider three values for set membership: "1" for full membership; "0" for full non membership; and, "0.5" for elements that have neither a full membership, nor a full non membership to the set (Ragin, 2009). More fine-grained fuzzy sets can use four[42] or six[43] values for membership scores to a fuzzy set, up to continuous values, where elements can hold every value in the interval from 0 to 1 (Ragin, 2009).

Both Boolean and fuzzy logics are applied in set-theoretic methods. In set theory, the combination of elements corresponds to the intersection of sets (A∩B), while in Boolean and fuzzy logics, it corresponds to the Boolean and fuzzy multiplication, usually denoted by the symbol (*). According to the Boolean logic, a conjunction $p \wedge q$ (logical AND) is equal to 1 if both p and q are equal to 1; otherwise it is equal to zero. In order to find the membership score of an element (or case) in a conjunction of two sets A and B (i.e., A * B), the minimum value, i.e. the lowest value score between the membership score that the element holds in A and the membership score that it holds in B, is taken.

With regard to the notation of logical alternatives (logical OR), set theory makes us of the union of sets (A ∪ B), while Boolean and fuzzy logics adopt the symbol (+) to identify Boolean and fuzzy addition. Accordingly, $p \vee q$ is equal to zero if $p=q=0$; otherwise it is equal to 1. To compute the membership score of an element in the union of two sets A and B (i.e., A + B), the maximum value, between the membership score that the element holds in A and the membership score that it holds in B, is taken.

A. Thus, in this case $f_A(x)$ reduces to the familiar characteristic function of a *set A*. (When there is a need to differentiate between such sets and fuzzy sets, the sets with two-valued characteristic functions will be referred as *ordinary sets* or simply *sets*.)" (Zadeh, 1965, p. 339, emphasis in the original).

[42]For instance: 0= full non-membership; 0.33= more out than in; 0.67= more in than out; and, 1= full membership (Ragin, 2009).

[43] For instance, 0= full non membership; 0.1= mostly but not fully out; 0.4= more or less out; 0.6= more or less in; 0.9= mostly but not fully in; and, 1= full membership (Ragin, 2009).

Finally, in Boolean algebra, the logical NOT (~*A*) is denoted as (1 − A), thus the negation ~*A* is equal to zero if $A = 1$[44], and it is equal to 1, if $A = 0$[45]. Therefore, in crisp sets, the logical operator NOT transforms membership scores from 1 to 0, and *viceversa*. Concerning fuzzy sets, the membership score of an element in the fuzzy set ~*A* can be calculated as (1 - fuzzy membership in the set *A*) (Ragin, 2009).

The main Boolean operations are summarized below, while Tables 2.2 and 2.3 show the corresponding truth tables:

Formula 2.2.16 – Boolean multiplication

$$A * B$$

Formula 2.2.17 – Boolean addition

$$A + B$$

Formula 2.2.18 – Boolean negation

$$1 - A$$

Table 2.2 - Truth Table (Boolean logic)

A	~A	B	A * B	A + B
1	0	1	1	1
1	0	0	0	1
0	1	1	0	1
0	1	0	0	0

Table 2.3 - Truth Table (Fuzzy logic)

A	~A	B	A * B	A + B
0.8	0.2	0.3	0.3	0.8
0.6	0.4	0.4	0.4	0.6
0.4	0.6	0.7	0.4	0.7
0.2	0.8	0.9	0.2	0.9

---

[44] $1 - A = (1 - 1) = 0$
[45] $1 - A = (1 - 0) = 1$

In set theory, the logical operators AND, OR and NOT are governed by a number of mathematical rules that are useful for understanding complex sets and for computing the membership of elements in compound logical expressions (Schneider and Wagemann, 2012). The first rule is *commutativity*, meaning that changing the order of the elements, which are connected through the logical operators AND and OR, does not change the result[46]. The second rule is *associativity*: when two or more elements are connected through the same logical operators, they can be combined in different sequences without changing the result[47]. The third rule is *distributivity*, meaning that multiplying a sum by a factor is equal to sum the products of each element by the factor[48]. Another important rule to calculate the negation of a complex set-theoretic expression is the so called "DeMorgan's law" (Schneider and Wagemann). This law governs the negation of complex logical statements, by stating that: a) the negation of a conjunction is the disjunction of the negations; and b) the negation of a disjunction is the conjunction of the negations[49]. Therefore, the following applies: ~ (A + B) = ~A * ~B; and, ~ (A * B) = ~A + ~B.

Set-theoretic approaches. In line with Schneider and Wagemann (2012), set-theoretic approaches employ the notions of sets and their relations to analyze social reality. Many social phenomena can be re-framed in terms of relation between sets; in turn, set relations can be interpreted as complex causal relations and expressed in terms of *equifinality*, *conjunctural causation* and *asymmetry* (Schneider and Wagemann, 2012). Given that set relations are interpreted in a causal manner, set-theoretic approaches make use of a specific terminology, which diverges from that adopted in the most common correlational methods. What are usually intended as independent variables, in set-theoretic approaches are defined *causal conditions*; in a similar vein, the term *outcome* is applied to denote the dependent variable, i.e. the phenomenon under investigation (Schneider and Wagemann, 2012). Moreover, what is in set theory generally denoted as element, in set-theoretic approaches is intended as a *case[50]*. Through a process of *calibration,* cases are assigned to the sets, according whether those cases can be described by the concept underlying the set or not (Ragin, 2008b; Schneider and Wagemann, 2012). After calibration, conventional variables are

---

[46] For instance, A * B = B * A, as well as A + B = B + A. In set theory, the commutative property is denoted by $A \cap B = B \cap A$ for the intersection of sets; and by $A \cup B = B \cup A$ for the union of sets.

[47] For instance, A * (B * C) = (A * B) * C, as well as A + (B + C) = (A + B) + C. In set theory, the associative property is denoted by $A \cap (B \cap C) = (A \cap B) \cap C = A \cap B \cap C$, for the intersection; and by $A \cup (B \cup C) = (A \cup B) \cup C = A \cup B \cup C$, for the union of sets.

[48] This means that A * (B + C) = A * B + A * C. In set theory, the distributive property is denoted by $A \cup (B \cap C) = (A \cup B) \cap (A \cup C)$; and by $A \cap (B \cup C) = (A \cap B) \cup (A \cap C)$.

[49] In set theory, this denoted by $(A \cap B)' = A' \cup B'$; and $(A \cup B)' = A' \cap B'$.

[50] In this research, *cases* are the 27 EU countries.

transformed into sets, i.e. the sets of causal conditions and the outcome set (Ragin, 2008b). The essential scope of set-theoretic methods is to investigate how (the sets of) causal conditions are related to (the set of) the outcome in terms of subset/superset relations, i.e. in terms of necessary and sufficient conditions, and combinations of these two types of causes for the outcome of interest (Schneider and Wagemann, 2012). Indeed, sets are not variables, as well as set-theoretic methods do not analyze correlations, but the intersection between sets (Fiss *et al*., 2013). Moreover, since set relations are asymmetric in nature, set-theoretic approaches avoid the use of the term "equation", by referring instead to necessity (denoted by "←") and sufficiency (denoted by "→") of a condition for the outcome of interest (Schneider and Wagemann, 2012).

Bearing in mind the aforementioned notions, a condition *A* is necessary if, whenever the outcome *B* occurs, it is present. This means that cases with the outcome *B* always show the condition *A*. To that effect, the outcome *B* is a subset[51] of the causal condition *A* (Ragin, 2008b). Necessity can be denoted as $A \leftarrow B$. Therefore, in fuzzy sets logic, *B* is a subset of *A* if the membership scores of cases in the outcome set (*B*) are less than or equal to their respective membership scores in the set of the causal condition (*A*) (Ragin, 2008b), i.e. $A \geq B$. Conversely, a condition *A* is sufficient if, whenever it occurs across cases, the outcome *B* is present. This means that all cases showing the condition also show the outcome; sufficiency can be denoted as $A \rightarrow B$ (Schneider and Wagemann, 2012). If *A* implies *B*, then *A* is a subset of B[51]. When it comes to fuzzy sets, a causal condition *A* is sufficient for the outcome *B*, if the fuzzy membership scores in the set of the causal condition (*A*) is less than or equal to the fuzzy membership in the outcome in the outcome set (*B*) (Ragin, 2008b),i.e. $A \leq B$.

Clearly, a condition can consists of a *conjunction* or a path of several causal conditions that are connected by the logical operator AND (*) (Schneider and Wagemann, 2012). In this case, the outcome comes to depend on the presence of two or more combined conditions. Denoting this *conjunctural* relationship with $A * C \rightarrow B$, this means that a single condition (for example, *A*) can play a causal role on the outcome only in combination with other causal conditions (in this case *C*). If set relations are interpreted in causal terms, a conjunction of condition implies a *conjunctural* causation (Ragin, 2000), i.e. a combination of multiple conditions where no single cause may be either necessary or sufficient (Kogut and Ragin, 2006; Ragin 2000). At the same time, causal conditions can be connected by the logical operator OR (+). In set-theoretic approaches, the logical OR describes an inclusive perspective of logical alternatives[52] (Schneider and Wagemann, 2012). For instance, the notation $A + C \rightarrow B$ means that *A* and *C* represent two alternative conditions that can equally explain

---

[51] See p. 44 for details on the logic of implication.
[52] See note 36, p. 44, for detailed explanation.

the outcome. However, through the logical operator OR (+), it is possible to connect several combinations of causal conditions. This is generally referred as *solution term* (Schneider and Wagemann, 2012). For instance, the notation $(A * C) + (D * E) \rightarrow B$ represents a solution term and it reflects both the concepts of *equifinality* and *conjunctural causation.* In detail, *(A*C)* and *(D*E)* stand for two alternative and mutually non-exclusive combinations of conditions that can equally explain the outcome *B*.

These notions correspond to the concept of *INUS conditions* introduced by Mackie (1965, 1974), which stands for "Insufficient but Necessary part of a condition which is itself Unnecessary but Sufficient for the result" (Mackie, 1974, p. 62). According to Mackie (1965), an outcome can have a plurality of causes. For this reason, a causal condition (A) can be not sufficient on its own, but it needs to be combined with other causal conditions (C) in order to form a sufficient conjunction for the outcome. Moreover, the conjunction (A * C) is itself unnecessary condition for the result, because there is another alternative pathway (i.e., D * E) that can lead to the outcome. Therefore, "INUS conditions which are neither sufficient nor necessary, but still part of the causal explanation, represent a very complex and advanced way of dealing with causality" (Wagemann, 2014, p. 52). Another causally complex statement refers to the concept of *SUIN condition* (Schneider and Wagemann, 2012). SUIN is the acronym for "Sufficient, but Unnecessary part of a factor that is Insufficient, but Necessary for the result (Mahoney *et al.*, 2009, p. 126). For instance, in the solution term $(A + C) * (D + E) \rightarrow B$, (A+C) and (D+E) represent a conjunction of two necessary conditions for the outcome B. However, each single union (for example, A+C) is not a sufficient condition, because it needs to be combined with the other union (D+E) to explain the outcome. While the former relation represents an equifinal causal relation, the latter implies a conjunctural causal relation.

Finally, set-theoretic approaches allow for taking into account the claims of causal asymmetry underlying complex configurations. Indeed, set-relations are asymmetric in their nature, and the circumstance that certain causal conditions explain the presence of the outcome of interest does not imply that the absence of the outcome is explained by the same causal conditions (Fiss, 2011). In other words, the occurrence and non-occurrence of the outcome may depend on the presence of two different configurations of elements.

By drawing on to the assumptions of institutional complementarities theory, configurational theory and set theory, the following sections develop the theoretical propositions that drive this work. The central tenet refers to the existence of complementarities between welfare states, labour markets and national cultures, which taken together are likely to show mutually reinforcing effects on gender diversity on boards. A set-theoretic approach is applied to conceptually explore:

1) The relations between the conjunction of national institutional arrangements (causal conditions) on female representation on boards (outcome) (*conjunctural causation*);

2) The existence of alternative and mutually non exclusive pathways that may lead to a higher number of women on boards (*equifinality*); and

3) The role of gender affirmative action in terms of necessity and sufficiency for gender diversity on boards.

2.3 Theoretical development

In line with the rationale of this research, the phenomenon of women on boards is proposed as the result of multiple causal relations between several interdependent institutional sets. Extant research has suggested that, among the others, three main institutional domains are more important for female representation on boards, compared to other institutional domains. In detail, welfare states, national cultures and labour markets have been found to play the most relevant role in shaping gender diversity on corporate boards (e.g., Adams and Kirchmaier, 2013; Grosvold and Brammer, 2011). Moreover, these institutional domains appear to be intimately connected each other, with the consequence that they are likely to result in complementary institutional sets. Accordingly, they may show a conjunctural causal effect on the number of women on boards of directors.

Section § 2.3.1 theoretically argues the existence of complementarities between these three institutional domains according to their similar *gendered* structures. However, in order to assess the strength of complementarities and their effects on the outcome under investigation, it is important to elect, within each institutional domain, the main causal conditions that are likely to create complementarities with causal conditions in other institutional domains. In this way, it is possible to unravel the causal mechanisms that link institutional complementarities to gender diversity on boards (in line with Deeg, 2007). By adopting a set-theoretic approach, § 2.3.2 proposes the existence of a combination of country-level conditions that is sufficient to achieve a higher number of women on boards, without the need for enacting gender quotas legislations. This means that the existence of complementarities between specific national conditions may create mutually reinforcing effects on the representation of women on boards, by making unnecessary the enactment of gender affirmative action. Recognizing the effects of institutional complementarities between welfare, labour and cultural institutions has relevance for assessing the necessity and sufficiency of public policies that are more appropriate to enhance female representation on boards. To that end, §2.3.3 proposes a set-theoretic explanation of the necessity and sufficiency of gender quotas for boards of directors, by exploring their role within national configurations. The adoption of a set-theoretic approach allows for developing a comprehensive conceptual framework that takes into account the intertwined forces that exist between regulatory policies that can

foster female representation on boards, and welfare, labour and cultural institutions that influence women's rise on boards.

Overall, this section proposes the existence of two *equifinal* and mutually non-exclusive bundles of causal conditions that can lead to a higher number of women on boards.

2.3.1 Institutional complementarities and women on boards

Conceptualizing the problem of female underrepresentation on corporate boards as a broader social phenomenon is useful to acknowledge that the arguments about women on boards cannot be separated from those issues related to the presence of women in other institutions, such as state, family, workforce and culture. Indeed, extant research has shown that welfare states, national cultures, and the structure of labour markets play an important role in shaping the presence of women on boards (see for example, Adams and Kirchmaier, 2013; Grosvold and Brammer, 2011). In turn, a parallel literature has documented that these institutional domains appear to be closely interconnected (e.g., Esping-Andersen, 1990, 1999; Mandel and Semyonov, 2006; Mandel and Shalev, 2009; Misra and Moller, 2005), by paving the way for possible claims of institutional complementarities.

Complementarities can be established according to specified performance criteria and perspectives (Höpner, 2005b). In this study, complementarities between welfare, labour and cultural institutions are theoretically argued by referring to two aspects. Firstly, they are assessed by taking a greater presence of women on boards as the performance criterion; secondly, they are established according to the similarity of institutions with reference to their similar *gendered* structure, i.e. their similar approaches to the gender perspective. Indeed, it is widely recognized that gender relations shape certain institutional domains, because gender itself is an institution rooted in other institutions (Martin, 2004; Terjesen *et al.*, 2009). According to Terjesen *et al.* (2009, p. 324), the perspective of gender is "an institution embedded in the workplace, occupations, and occupational environments through formally defined rules, roles, and responsibilities and the "habitus" of mental structures through which individuals think about their social world". Consequently, it is rational to argue that welfare, labour and cultural institutions show a profound gendered nature. They are discussed each in turn.

Gender in welfare states. States have "codified many aspects of gender into laws or regulations" (Martin, 2004, p. 1259). This is particularly apparent in the case of welfare state, "which it is closely connected to gendered dimensions of maternity leave, childcare, and female labour force participation" (Terjesen *et al.*, 2014). On the one hand, the majority of welfare states across EU countries show a great inequality in terms of legislation for parenthood rights. In other words, the protection of motherhood rights,

through the provision of extended-length maternity leaves, clearly has prevailed on fatherhood rights[53]. In addition, despite decades of equal opportunity initiatives, welfare policies have continued to favour mothers over fathers, giving a proof of the strong path-dependency of institutions. As noted by Terjesen *et al.* (2014), "at an early stage, different policy paths are equally possible, and there is a wide choice of potential social outcome". However, the choice of a certain path of policies influences future decisions, by making rather difficult to change direction (Greener, 2005; Pierson, 2000). This evidence suggests that during the past decades states have progressively mobilized gender into welfare institutions, by fostering a sort of legal maternal wall and by institutionalizing the prevalent role of women in childcare and housework. Considering that men's power over women has been supported from legal institutions for many years (Connell, 1987), institutions have reflected the interest of those who had power to make rules, giving evidence that institutions are not necessarily socially efficient (North, 1990). Orloff (1993, 1996) contends that gender relations within social systems and welfare states mutually influence each other (Orloff, 1996). At the same time, several scholars support the role of welfare states in promoting equal opportunities, especially with regard to female participation in the labour market (see for example, Esping-Andersen, 1990, 1999; Mandel and Semyonov, 2006; Misra and Moller, 2005). In this way, the presence of gender in welfare institutions contributes to shape gender roles also in family, labour and cultural institutions.

Gender in labour markets. Labour markets show a similar gendered logic. As argued by Williams (2005), much of gender inequality in labour environments depends on the division of gender roles between work and family. Essentially, there is a conflict between two gendered norms: 1) the prescriptive norm of the ideal worker, i.e. full-time and full-force for working; and 2) the prescriptive norm of the ideal mother, i.e. full-time and full-force for childbearing and childrearing (Williams, 2005). This perspective is also supported by Børve (2007, p. 322), who asserts that the boundless working time culture (full-time and overtime) produces "workers without gender and body". In a similar vein, Guillaume and Pochic (2007, p.22) note that "the typical organizational career pattern, linear and progressive, ignores individual life cycles and implicitly assumes that managers are male". Mandel and Shalev (2009) document that the typical skill regimes of CMEs are more appropriate to the male model of full time and continuous employment. For this reason, women are confined just to certain areas of employment. Therefore, the presence of gender in labour markets depends on the presence of stereotypes, biases and social prejudices linked to the maternal role of

---

[53] See Table 3.3, Chapter 3, p. 84.

women. In turn, such social norms may be perpetuated by the presence of gender unbalance in welfare policies. Since the gender perspective that is embedded in welfare institutions enhances the presence of gender imbalance in labour markets and in cultural beliefs of what is expected by women and men in society, then welfare, labour and cultural institutions can be considered closely complementary in their gendered structures.

Gender in national culture. The perceived affinity and inter-correlations among institutions reveals an underlying cultural logic that claims a particular body of causal beliefs (Kogut and Ragin, 2006, p. 45). Individuals with common cultural backgrounds are likely to share convergent mental models, ideologies, and institutions; for this reasons, institutions underlie common beliefs and cultural norms on what is expected from individuals (Denzau and North, 1994)[54]. In his theoretical framework, Scott (1995) asserts that the normative and cultural cognitive pillars of institutions help to explain the influence of culture, values and social norms on behaviours (Scott, 1995). In a similar vein, many sociologists recognize that the "human agency" has a role in creating, shaping and changing social institutions (Nisbet, 1953), through recursive practices (Giddens, 1984), routine and repetition (Connell, 1987), and *habitualization* (Berger and Luckmann, 1966). Gendered practices and processes have moved gender in multiple settings and contexts (Acker, 1992). In this frame, "gender is a property of collectivities, institutions and historical processes" (Connell, 1987, p. 139), giving a proof of the fundamental sociality of gender (Lorber, 1994). Since the concept of culture refers to human behaviours, recursive practices, norms and beliefs of a given society, it is rational to assume that when individuals take gendered behaviours, gendered processes and gendered practices, gender ends up flowing into national culture. In doing so, gender becomes a property embedded in cultural institutions and it may enhance the presence of gender in other institutions through individual behaviours. To that regard, the role of culture in shaping gender relations at several levels of social life is widely acknowledged in academic literature (e.g., Hofstede, 1983; Gupta *et al.*, 2002; Grosvold and Brammer, 2011; Williams, 2003). For instance, Williams (2003) asserts that workplaces persist to be largely male-oriented, owing to long lasting cultural attitudes. In a similar vein, a number of scholars emphasize the relevant influence of cultural attitudes on female career advancements and female representation on boards (e.g., Adams and Kirchmaier, 2013; Nelson and Levesque, 2007; Terjesen *et al.*, 2009;

---

[54] To that regard, Denzau and North (1994, p.15) affirm: "The cultural heritage provides a means of reducing the divergence in the mental models that people in a society have and also constitutes a means for intergenerational transfer of unifying perceptions. We may think of culture as encapsulating the experiences of past generations of any particular cultural group. With the diversity of human experiences in different environments, there exists a wide variety of patterns of behaviour and thought".

Terjesen *et al.*, 2014; Swiss and Walker, 1993; Williams, 2000). Looking at national differences, cultural institutions have been found to influence the level of gender differentiation[55] and the distribution of power in a given society (e.g., Bakacsi *et al.*, 2002; Gupta *et al.*, 2002). Taken together, these observations lead to assume that gender schemas in national cultures may contribute to shape labour institution with a profound gendered perspective. Moreover, if national culture affects the level of gender differentiation and the distribution of power in the overall society, it is rational to assume that the presence of gender in cultural institutions may also reinforce the presence of gender in welfare institutions. This linkage is substantiated by the evidence that: 1) institutions reflect the long lasting men's power over women (Connell, 1987); 2) rules are made from those who have power (North, 1990); and 3) States (i.e., the maximum expression of power in a given society) have transposed many aspects of gender into laws or regulations (Martin, 2004, p. 1259). In sum, gendered culture shapes gender-based welfare and labour institutions. In turn, the presence of gender in welfare institutions reinforces the presence of gender in labour markets, as well as the existence of gender roles in society.

According to the concept of synergy in institutional complementarities (e.g., Campbell, 2011; Crounch, 2005), the presence of similar gendered structures within each institutional domain may generate strong complementarities, which in turn are likely to determine synergic effects on a given national outcome (women on boards). In other words, welfare, labour and cultural institutions are aligned and organized around similar and compatible *gendered* structures. This sort of similarity leads these institutions to complement each other and to mutually reinforce their similar gendered nature, by creating synergic effects on the on the distribution of power and opportunity between men and women. As a result, if the presence of women on boards of directors reflects the overall power structure of a social system, then it is reasonable to expect that the presence of institutional complementarities in countries with more gender-neutral welfare, labour and cultural institutions creates positive synergic effects on the number of women that hold corporate board positions. For this reason, the different performance in terms of female representation on boards across EU countries can be explained by the existence of complementarities between the three main institutional domains that have been found to have the most relevant role in shaping the number of women on boards, namely welfare states, labour markets and national cultures. Definitively, the more 'non-gendered' cultural, welfare and labour institutions are, the higher the number of women on boards of directors.

---

[55] The concept of gender differentiation refers to "the degree to which men and women are viewed differently in a given" society (Grosvold and Brammer, 2011, p. 121).

2.3.2 A set-theoretic analysis of institutional complementarities and women on boards

Recognizing the existence of institutional complementarities and their synergic effects on female representation on boards has a twofold implication.

On the one hand, since complementarities can be conceived as specific types of complex configurations associated with positive effects (Jackson and Ni, 2013, p. 136), this allows for exploring the existence of *conjunctural* causal relations between institutions. Indeed, assuming a case of institutional complementarities underlies a causal effect and it posits that the effects of one institution depend on the presence/absence of another institution (Deeg, 2007; Jackson, 2005). Therefore, the presence of complementarities between welfare, labour and cultural institutions imply that the effect of one of them depends on the presence or absence of the other complementary institutions. Moreover, the assumption that complementary and consistent institutions have mutually reinforcing effects on female representation on boards underlies a claim of *conjunctural* causation, which can be intended in terms of conjunction or combination of multiple causal conditions for the outcome. As noted above, the interdependence of institutions, their perceived affinity and the underlying cultural logic (e.g., Acker, 1992; Neale, 1988; Kogut and Ragin, 2006) invokes a problem of causal complexity, defined as "patterns of multiple conjunctural causation where no single cause may be either necessary or sufficient" (Kogut and Ragin, 2006:47). In a similar vein, the *configurational* nature of complementarities (Jackson and Ni, 2013) enables to inquire whether a "superior" national model, or an "ideal" national configuration, for female representation on boards exists across EU countries.

On the other hand, acknowledging the effects of interacting institutions is very important for both theoretical research and policy recommendations (Amable, 2000). When the causal mechanisms between complementary institutions and women on boards are verified, it is possible to investigate which mix of public policies is more appropriate to promote female representation on boards. In detail, considering that the debate about the adoption and diffusion of gender quotas for corporate boards is controversial and still open, this study pays a particular attention on the role of gender quotas policies, in terms of their necessity and sufficiency for the presence of a major number of women on boards. To that regard, it is important to understand whether institutions are "neutral" or not, since whether a practice may be transferred in other countries depends on existing configurations of institutions and their efficacy may depend on some affiliated belief structures (Kogut and Ragin, 2006). National institutions can combine in different ways and generate different national configurations. As a result, such configurations may show different conjunctions of country-level causal conditions (*conjunctural causation*) that can equally lead to a higher number of women on boards of directors (*equifinality*).

In order to deepen these issues, the present section adopts a set-theoretic approach, particularly suitable when the inquiry concerns the study of causally complex relations.

Moreover, the logic underlying set-theoretic approaches allows for developing a comprehensive conceptual model that takes into account the relationships between "bundles" of causes that influence women's rise on boards and the enactment of regulatory policies that can facilitate this rise. In order to evaluate the existence of institutional complementarities it is necessary to assess, for each institutional domain, the relative significance of specific institutional attributes, or their combination, for generating complementarities with other domains (Deeg, 2007). In a set-theoretic perspective, such an investigation requires the election of the main country-level conditions, within each institutional domain, that are responsible for combined causal relationships between welfare, labour and cultural institutions. In particular, the selection of causal conditions "should occur via an iterative dialogue between prior theoretical knowledge and empirical insights gained during the research process" (Schneider and Wagemann, 2012, p. 277). For the purpose of this research, country-level causal conditions were elected according to two characteristics: 1) their significant impact on gender diversity on corporate boards; and 2) their relative significance in unravelling the gendered nature of institutions. They are described below.

Selection of country-level causal conditions. Considering the plurality of inputs underlying cultural and labour institutions (e.g., labour regulation, earnings gap, stereotypes, mental models, recursive practices, behaviours), their gendered structures were assessed in terms of macro-variables, i.e. in terms of aggregate measures related to the final outcome that the presence of gender in such institutions can determine. By making reference to the broader concept of gender equality in society, it is possible to measure the presence of gender in national culture. Therefore, countries with more non-gendered cultural institutions are expected to present higher levels of gender equality in society. With regard to labour markets, both female employment and part-time female employment are taken as a valid proxy of how gender perspective is embedded within labour institutions. As noted by Adams and Kirchmaier (2013), part time jobs for taking on family responsibilities might undermine women's career opportunities. For this reason, policies for full-time female employment and childcare services are important to foster work-life balance. Consequently, countries with more gender-neutral labour institutions are expected to present high level of female employment and not high level of female part-time job.

When it comes to welfare institutions, it is important to understand that welfare states operate at multiple levels, through several public policies and with different outcomes for the wellbeing of a number of social groups. As a result, only those policies that are more directly related to the phenomenon of female representation on boards were chosen. In order to assess the presence of a gendered structure in welfare institutions, schemas of parental leave (more exhaustively, maternity leave, paternity leave, and parental leave schemas) and public childcare policies were taken. This choice was

motivated by several reasons. On the one hand, parental leave provisions for mother, father and both parents taken together represent an appropriate proxy of the gendered nature of welfare states, as well as they are plausibly a relevant foregoer of the actual division of family and childcare responsibilities between men and women. On the other hand, as argued by Terjesen *et al.* (2014), the nature of the welfare state is closely related to gendered dimensions of maternity leave, childcare services and female labour participation. Actually, in many other research context, mother's entitlements and maternity leaves were often chosen to show the perverse effects of work/family reconciliation policies on female employment and careers (e.g., Aschcraft, 1999; Grosvold and Brammer, 2011; Mandel and Semyonov, 2006; Mandel and Shalev, 2009; Misra and Moller, 2005; Nelson and Levesque, 2007). For instance, in line with Esping-Andersen's definition of the *defamilialization* role of states, the public support offered for working mothers, such as paid maternity leave or reduced working hours fails to liberate women from family's responsibilities (Misra and Moller, 2005) and it strengthens their dominant role in childcare, eldercare and housework. In addition, maternity leaves are considered as a cost for organizations (Imperatori and Paolino, 2013); this negative view creates negative stereotypes about maternity (e.g., Guetal *et al.*, 1995) in workplaces and lead employers to invest in and hire male work-force (Grosvold and Brammer, 2011). By examining the labour force participation gap, Ganguli *et al.* (2011) find that a gap between mothers and non-mother women (defined by the authors as "motherhood gap") still exists and it is heterogeneous among countries. In sum these causal conditions are suitable to reflect the gendered nature of welfare institutions and they are likely to generate complementarities with labour and cultural institutions. When the more extended length of maternity leaves is compared to the less extended length of paternity leaves, this circumstance reflects a strong presence of gender in welfare institutions. In a similar vein, an extended length of parental leaves (generally available for both mothers and fathers) may reflect a more egalitarian role of men and women in childcare[56]. By introducing equal opportunity for both fathers and

---

[56]Despite recent calls from some international bodies (e.g., International Labor Organizational, Council of Europe) to make the share of family responsibilities between women and men more egalitarian, Sweden is considered the only society formally committed to promote fatherhood and the equal involvement of fathers in child care (Haas, 1992). This approach emphasizes that Swedish welfare institutions protect parenthood more than motherhood, giving evidence that gender equality is embedded in institutions. Sweden guarantees 480 calendar days of paid leave to the family, by providing both mother and father's quota of leave through a unique parental leave benefit system. Bearing in mind that "every society represents a peculiar configuration of historical, economic, political, and social force" (Haas, 1992:18), it is widely recognized that Sweden has a radical gender equality culture (Teigen, 2012), which is the main reason to assume that Swedish government did not need to introduce board gender quotas (Teigen and Wangnerud, 2009). Evidence shows that in Sweden there is one of the highest rates of women on boards worldwide (Terjesen *et al.*, 2014).

mothers to take time off for childcare, parental leave schemes can be an effective tool for promoting gender equality (Eydal and Gislason, 2008). Moreover, more "women-friendly" welfare states generally provide high levels of childcare services, since these services release women from their prevalent role in domestic responsibilities. Overall, it is reasonable to expect that countries with more "non-gendered" welfare institutions show a shorter distance in the length of paternity and maternity leave (comparatively speaking, this means that these countries should show higher length of paternity leave and not higher length of maternity leave compared to other countries), higher level of parental leaves, and higher level of childcare services.

If the existence of complementarities is likely to be true in a theoretical perspective, it determines synergic effects on female representation on boards (see § 2.3.1). Since the presence of similar, aligned and consistent gendered structures within each institutional domain generates strong complementarities and synergic effects, then the more gender-neutral the cultural, welfare and labour institutions are, the higher the number of women on boards of directors will be. In view of that, gender relations in these three institutional domains are related causally and jointly to gender balance on boards of directors; thus, women on boards can be intended as the outcome of multiple relations between different institutional sets, whose attributes shape the "gendered" nature of institutions themselves. To that effect, they are the outcome of the *conjunctural* causal relationship between several sets of gender-neutral institutional conditions. In set-theoretic terms, this means that the conjunction or combination of these causal conditions is sufficient to achieve a comparatively higher number of women on boards across countries. In other words, high paternity leave, not high maternity leave, high parental leave, high level of childcare services, high female employment, not high female part-time job *AND* high gender equality in society are sufficient conditions for a higher number of women on boards. Since it has been driven by theory-based expectations, this combination of gender-neutral causal conditions can be intended as an "ideal" configuration of institutional attributes that lead to a greater gender balance on boards. Accordingly, the following is proposed:

Proposition 1: The conjunction of high paternity leave, not high maternity leave, high parental leave, high level of childcare services, high female employment, not high female part-time job AND high gender equality in society is sufficient to achieve a higher number of women on boards.

In set-theoretic notation, this joint causation can be denoted as follows:

High Paternity Leave * ~ High Maternity Leave * High Parental Leave * High Level of Childcare Services * High Female Employment * ~ High Female Part-Time Job * High Gender Equality → High Number of Women on Boards.

2.3.3 The necessity and sufficiency of gender quotas for boards of directors

Considering the notion of sufficiency, a condition is sufficient if, whenever it occurs across cases, the outcome is present. This means that the presence of the condition implies the presence of the outcome. Gender quotas for boards of directors should be a sufficient condition if, whenever they occur across countries, those countries show a higher number of women on boards. To that regard, the enactment of mandatory gender quotas at board level, by definition, leads to increase the number women in board positions. Therefore, it is logically true that the presence of mandatory gender quotas at board level implies the presence of more women in board positions. This corresponds to say that whenever gender quotas regulation occurs across countries, these countries are expected to have a high number of women on boards, or rather, that gender quotas are sufficient by themselves to achieve this outcome. More formally, the following proposition is proposed:

Proposition 2: Gender quotas for boards of directors are a sufficient condition to achieve a higher number of women on boards.

In set-theoretic notation, this relation can be denoted as follows:

Gender Quotas for Board of Directors → High Number of Women on Boards.

In a *configurational* perspective, this means that gender quotas represent an alternative pathway to the outcome of interest. Consistent with this standpoint, some scholars have recognized that, when countries lack of particular women-friendly conditions, affirmative action such as gender quotas may be a valuable alternative to have more women on boards (e.g., Grosvold and Brammer, 2011). In addition to the ideal configuration proposed in Proposition 1, Proposition 2 shows another sufficient condition for the outcome, i.e. gender quotas for boards of directors. Essentially, Proposition 1 and Proposition 2 represent two equally effective and mutually non-exclusive pathways for a greater number of women on boards. Bearing in mind that conjunctural causal relationship is denoted by logical AND operators (*), while *equifinality* of different combinations of causal conditions is denoted by logical OR operators (+), in set-theoretic terms, the presence of two *equifinal* pathways for the outcome can be denoted as follow:

High Paternity Leave * ~High Maternity Leave * High Parental Leave * High Level of Childcare Services * High Female Employment * ~High Female Part-Time Job * High Gender Equality + Gender Quotas for Board of Directors → High Number of Women on Boards.

On the other hand, gender quotas for boards of directors should be a necessary condition if, whenever a higher number of women on boards occurs across countries, those countries have enacted gender quotas legislations. Indeed, the notion of necessity states that a condition is necessary if, whenever the outcome is present, the condition is always present. However, the theory-driven Proposition 1 shows a configuration of causal condition that is sufficient to achieve a higher number of women on boards, without the enactment of gender quotas for boards of directors. According to the theoretical expectations, the conjunction of very gender-neutral institutional attributes is sufficient to achieve a higher presence of women on boards, without requiring any kind of regulation or self-regulation at board level. This is owing to the great internal consistency and gender neutrality of aligned institutions that entail superior effects on female representation on boards, through the existence of institutional complementarities. In set-theoretic terms, this means that the outcome (a higher number of women on boards) is present, while the condition (gender quotas) is absent. Definitively, gender quotas for boards of directors are a sufficient, but not necessary condition to achieve a higher number of women on boards. More formally:

Proposition 3: Gender quotas for boards of directors are not a necessary condition to achieve a higher number of women on boards.

An important contribution of adopting set-theoretic approaches is that they allow for the empirical verification of theory-informed propositions that concern configurations of causal conditions for an outcome of interest. To that end, this study applies a particular set-theoretic method, called fuzzy set/Qualitative Comparative Analysis (fs/QCA), which enables to map countries as different national configurations of causal conditions in order to verify empirically the alleged assumptions. In line with Schneider and Wagemann (2012), when the phenomenon under investigation is likely to be better understood in terms of set relations (i.e., in terms of *conjunctural* causation, *equifinality* and causal asymmetry), QCA is an adequate methodological choice. The next chapters presents a comparative analysis of national configurations in the 27 European Union countries. Through fs/QCA, each country is taken as a configuration of specific national conditions, including regulatory policies, welfare policies, characteristics of labour markets, and levels of gender equality in the overall society. In doing so, the analysis explores the existence of particular combinations of country-level causal condition that can lead to a higher number of women on boards, as well as it verifies the necessary and/or sufficient function of gender quotas for corporate boards in the existing national configurations.

CHAPTER SUMMARY

By drawing on to the assumptions of institutional complementarities theory, *configurational* theory and set theory, this chapter has developed the theoretical propositions that drive this work. The presence of similar and consistent "gendered" structures theoretically supports the existence of complementarities between welfare, labour and cultural institutions, as well as their causal synergic effects on female representation on boards. The central tenet of this work is that the more gender-neutral, cultural, welfare and labour institutions are, the higher will be the number of women on boards of directors. By addressing the importance of institutional interdependencies for policy recommendations, a set-theoretic approach has been adopted to study women on boards in terms of causally complex relations. In order to assess the strength of complementarities and their effects on the outcome under investigation, it has been necessary to elect the main country-level causal conditions, within each institutional sphere, that were likely to generate complementarities with other domains. This step is relevant to better understand the causal mechanisms that link institutional complementarities to gender diversity on boards. These causal conditions have been elected according to two characteristics: 1) their significant impact on gender diversity on corporate boards; and 2) their relative significance in unravelling the gendered nature of institutions. They are paternity leaves, maternity leaves, parental leaves, and childcare services (for assessing the gendered nature of welfare institutions); female employment and female part-time employment (for assessing the gendered nature of labour markets); level of gender equality in the overall society (for assessing the gendered nature of national cultures). Therefore, women on boards can be intended as the outcome of multiple relations between different institutional sets, whose conditions shape the "gendered" nature of institutions themselves. In set-theoretic terms, this means that the conjunction or combination of these causal conditions is sufficient to achieve a comparatively higher number of women on boards across countries. Accordingly, three main theoretical propositions have been formulated according to set-theoretic logic and notation. Proposition 1 suggests a sufficient combination of country-level causal conditions that can lead to a higher number of women on boards, without the need for enacting gender quotas for boards of directors. This means that the existence of complementarities between specific national conditions may create mutually reinforcing effects on the representation of women on boards, by making unnecessary the enactment of gender affirmative action. Addressing the effects of institutional complementarities between welfare, labour and cultural institutions has relevance for assessing the necessity and sufficiency of gender quotas policies for female representation on boards. Proposition 2 and Proposition 3 suggest that gender quotas for boards of directors are a sufficient, but not necessary condition to achieve a higher number of women on boards. Overall, this chapter proposed the existence of two *equifinal* and mutually non-exclusive bundles of causal conditions that can lead to a higher number of women on boards. By using fs/QCA, the next chapters presents an empirical investigation of these theoretical propositions.

CHAPTER 3   METHOD

OVERVIEW: This chapter presents a comparative analysis between the 27 EU countries (*cases*). Through fuzzy sets/Qualitative Comparative Analysis (fs/QCA), countries are mapped in terms of configurations of institutional attributes (*causal conditions*). The aim is to explore the existence of particular combinations of country-level attributes that can lead to a comparatively higher number of women on boards across countries. Fs/QCA allows for the causal interpretation of the phenomenon of gender diversity on boards. In this way, the alleged claims of *conjunctural* causation and *equifinality* are empirically investigated.

3.1 Fuzzy sets / Qualitative Comparative Analysis

In order to answer the alleged research questions, this work presents an empirical investigation, aiming to corroborate the theoretical propositions that have been formulated in the previous chapter. In detail, it performs a qualitative comparative analysis between the 27 European Union countries. Taken together, the great heterogeneity in terms of female representation on boards across EU countries and the contextual commitment of EU institution in promoting initiative that bring more women in top management positions, create a suitable scenario for the objectives of this research. The comparative analysis of their differences and similarities contributes to shed light on the existence of institutional complementarities in shaping female representation on boards. At the same time, the results of this comparison can help to assess whether gender quotas that were enacted in some EU countries might be transferred in other EU countries. Clearly, statistical investigation can be difficult for this purpose. Beyond the well known conflict between the predominant linear paradigm and the assumptions of configurational theory (Fiss, 2007), the number of countries and their possible interactions is rather limited to perform statistical analyses (Kogut and Ragin, 2006).

Accordingly, this work proposes a fuzzy sets/ qualitative comparative analysis (fs/QCA) in order to explore countries in terms of national configurations. To that end, fs/QCA is applied as both a research approach and an analytical technique. The adoption of this methodological tool leads to map countries as configurations of several institutional attributes and to unravel all possible combinations that these attributes can generate. By comparing configurations of causal conditions, fs/QCA allows for investigating the alleged claims of complementarities and causal complex relations

between sets of complementary institutions and gender diversity on boards. Essentially, this method tends to maximize the number of comparison between configurations, and then to logically reduce them in simpler causal statements. Therefore, through fs/QCA it is possible to detect the existence of a superior national model (or "ideal type") that is connected with a greater number of women on boards of directors, as well as the existence of multiple pathways of causal conditions that can equally lead to the outcome under investigation. At the same time, fs/QCA applies the assumptions of set theory and the rules of Boolean algebra. According to Kogut and Ragin (2006), this is a very important property, because to take a configurational perspective often means facing unspecified and unknown relationships among a number of elements in reference to a given outcome. To that regard, by involving both the logic of sets and Boolean logic, QCA contributes to reduce this complexity and to find the minimal number of logical statements (Kogut and Ragin, 2006). This mixture is valuable to investigate relationships in terms of necessity and sufficiency of causal conditions for the outcome at hand. Overall, these characteristics are well suited with the aim of verifying the necessary and/or sufficient function of gender quotas in the existing national configurations.

Overall, when the purpose of research is to analyze a phenomenon in terms of (causal) relations between sets and to assess the presence of *equifinality* and *multiple conjunctural causation*, QCA represents a fruitful methodological choice (Schneider and Wagemann, 2012). Interestingly, Fiss *et al*. (2013, p.12) suggest that QCA is a very promising methodological tool "to resolve a number of long-standing puzzles in organization theory including board composition (...)". This study can represent a first effort to that effect.

However, for the purpose of this study, it is important to understand that sets are not variables; consequently, QCA does not analyze correlations, but it provides a causal interpretation of the phenomenon under investigation (Fiss *et al*., 2013; Schneider and Wagemann, 2012). The configurational assumptions of nonlinearity, synergistic effects and *equifinality* come to diverge from the linear paradigm that is typical of correlations-bade methods, whose properties are linearity, additive effects and *unifinality*[57] (Fiss, 2007, p. 1181). More exhaustively, QCA produces results that reveal several aspects of causal complexity, since it allows for investigating how certain causal conditions are jointly related to the outcome in terms of subset/superset relations, i.e. in terms of necessary and sufficient conditions for the outcome (Schneider and Wagemann, 2012). These characteristics have made QCA particularly widespread in the literature. Indeed, although this method has been especially used in political and social research, it is now

---

[57] See § 2.2.2 for further details.

spreading in a plurality of fields and disciplines, such as political economy, management and organization studies (Ragin and Rihoux, 2004; Rihoux, 2006; e.g., Kogut and Ragin, 2006; Grandori and Furnari, 2008; Seeleib-Kaiser and Fleckenstein, 2009; Fiss, 2011; Garcìa-Castro *et al.*, 2013).

QCA has its roots in a "synthetic strategy" between complexity and generality, thus representing a middle, and distinct, path between case-oriented research approaches and variable-oriented research approaches (Ragin, 1987, p. 84). By integrating these approaches, QCA has resulted in a method that is both qualitative and quantitative in its nature. To that regard, QCA can be understood both as a research approach and as a data analysis technique (Rihoux and Ragin, 2009). While the latter refers to the quantitative roots of QCA, i.e. to the "analytical moment" of finding empirical patterns of conditions through specified algorithms and appropriate software, the former refers to the qualitative roots of QCA (Schneider and Wagemann, 2010). Conceiving QCA as a research approach refers to the overall iterative research process underlying QCA, i.e. to the specification and re-specification of selection criteria, the selection and re-selection of cases and causal conditions, the specification and re-specification of concepts and criteria during the research process. Indeed, the adoption of a QCA research approach require a continue dialogue between ideas and evidence, before and after the analytical moment (Ragin 1987, 2000). Since "this middle path emphasizes the use of a configurational approach to cases and thus retains some of the holism of the case-study approach in the analysis of cross-case pattern", it has been considered the foundation of a "diversity-oriented research" (Kogut and Ragin, 2006, p. 47). Although neither the use of set theory nor the adoption of a configurational approach represent novel methodological tools, the distinctiveness of this method stems from their combination to analyze how configurations of causal conditions contribute to explain an outcome (Fiss *et al*., 2013). To that effect, QCA represents a specification of a broader class of Configurational Comparative Methods (CCMs) that are based on set theory and that allow for "systematic cross-case comparisons, while at the same time giving justice to within-case complexity" (Rihoux and Ragin, 2009, p. xviii).

Under the heading of Configurational Comparative Methods, three main analytic techniques are included: 1) crisp-set QCA (csQCA); 2) multi-value QCA (mvQCA); and 3) fuzzy-set QCA (fsQCA) (Rihoux and Ragin, 2009). In his original applications, QCA was based on the binary logic of Boolean algebra (Ragin, 1987) with only two values for each variable ("0" for full non-membership or "1" for full membership). For this reason it was referred as crisp set – QCA (cs/QCA). However, the limits of dichotomizing phenomena just into two values are well known in social research. In later versions, QCA has been developed to allow multiple-category conditions (this is the case of mvQCA), as well as to involve the application of fuzzy logic, according to which conditions can have continuous values between 0 and 1 (Ragin, 2000). The latter

case is referred as fs/QCA. With the application of fuzzy logic, it is possible to have more fine-grained measures of the attributes involved in the analysis (Fiss, 2007).

The next section provides a brief description of the main steps and procedure that the application of a fuzzy-set qualitative comparative analysis requires.

3.1.1 Main steps and procedures in fs/QCA

In order to analyze complex configurations, QCA follows a meticulous procedure.

Selection of cases, causal condition and outcome. The first step concerns the selection of cases, causal condition and outcome. This choice requires a systematic dialogue of ideas and evidence and it needs to be theoretically informed (De Meur and Rihoux, 2002; Kogut and Ragin, 2006; Rhioux, 2006). Overall, theory is very pervasive in a QCA research approach, since it implicitly leads researchers to provide a theoretical justification of their choices, by explaining why, how and which particular conditions are causally related to the outcome of interest. As noted by Schneider and Wagemann (2012, p. 277), the selection of causal conditions should made trough "an iterative dialogue between prior theoretical knowledge and empirical insights gained during the research process". In line with this logic, during the research process, cases, causal condition and outcomes can also be added, dropped or reconceptualised (Schneider and Wagemann, 2012). This iterative process allows researchers to develop robust explanations about the underlying causal mechanism that link several causal condition to an outcome. Moreover, in line with Schneider and Wagemann (2010), it is important to be as much familiar as possible with the cases at hand. The aforementioned authors suggest that a profound knowledge of cases is fruitful before the analysis, since it helps to identify relevant causal conditions, as well as after the analysis, as it contributes to the interpretation of the results. Taken together, the selection of cases and causal conditions is strictly related to the use of QCA as research approach. Section 3.2 defines the research setting of this study, by theoretically justifying the choice of both cases and causal conditions to be included in the empirical analysis.

Set Calibration. The second steps refers to the calibration of set-membership scores, i.e. the definition of the membership degree of cases to the sets, with a score ranging between 0 (full exclusion from a set) and 1 (full inclusion in a set). The process of calibration essentially consists in the transformation of conventional variables in fuzzy sets, and it is one of the most important steps in fs/QCA, because cases will be assessed with regard to their membership in previously specified sets of conditions (Schneider and Wagemann, 2012). Concerning the criteria to be used, calibration should be made "using theoretical and substantive criteria external to the data and taking into account the researcher's conceptualization, definition, and labeling of the set in question" (Ragin, 2008b:16). While the use of criteria that are external to the data is

recommended, the use of just quantitative parameters, such as the mean, is highly discouraged, since the set-membership of a case to a set comes to depend from other cases (Schneider and Wagemann, 2012). Although there are two methods of calibration, namely the "direct" and the "indirect" method (Ragin, 2008a), this section particularly focuses on the direct method, since it is applied in this study.

The "direct method" of calibration uses a logistic function and it works in the metric of log odds, through which interval-scale variables are transformed into a log odds metric, and then into the degree of membership in the target set (Ragin, 2008a, 2008c). Generally, a logistic function is used in logistic regression to model how the probability of an event may be affected by one or more explanatory variables. Logistics functions are useful because the value of the output always ranges between 0 and 1. The inverse of a logistic function is denoted as *logit* (i.e. log odds or natural logarithm of the odds). In line with Ragin (2008c), the odds of full membership and the corresponding log odds are obtained with the following formulas:

Formula 3.1.1 - Odds of membership

$$Odds \ of \ membership \ = \frac{(degree \ of \ memebership)}{(1 - \ degree \ of \ memebership)}$$

Formula 3.1.2 - Log Odds

$$Log \ odds \ = ln \ \frac{(degree \ of \ memebership)}{(1 - \ degree \ of \ memebership)}$$

Once a target set has been conceptualized and it has been labelled according to the theoretical and substantive knowledge of researchers (e.g. the set of "EU countries with high level of paternity leave"), three important qualitative anchors have to be selected. They correspond to the threshold for the full membership of countries in the target set (1); the threshold for the full non-membership of countries in the target set (0); and, the cross-over point, where cases have both a membership and non-membership score of 0.5 in a given set (Ragin, 2000; 2008a). However, since this method is based on a logistic function, the actual anchors correspond to the fuzzy score of 0.95 for the full membership; the fuzzy score of 0.05 for the full non-membership, and a fuzzy score of 0.5 for the point of maximum ambiguity (Scheider and Wagemann, 2012). After defining the three threshold values for each condition and outcome, calibration can be automatically calculated through the use of the fs/QCA software package 2.5 (Ragin *et al.*, 2006). However, in order to better understand the logic underlying the direct method of calibration, some mathematical aspects require a further explanation. This procedure is well explained in Ragin (2008c), to whom the following elucidation makes reference.

Let the 27 EU countries be the cases that need to be assigned into the set of "EU countries with high level of paternity leaves", the values of variables correspond to the number of days for statutory paternity leaves that are enacted in each EU country. The three qualitative anchors are established at: 15 days for the threshold for full membership; 9 days for the cross-over point; and, 3 days for the threshold of full non-membership. The first value, i.e. the threshold for full membership, corresponds to a set membership score of 0.95; the corresponding odds of membership is equal to 19, as calculated by applying the formula (*3.1.1*); the natural log of the odds is exactly 2,94. The third value, i.e. the threshold for full non-membership, corresponds to a set membership score of 0.05; the corresponding odds of membership is equal to 0.1, as calculated by applying the formula (*3.1.1*); the natural log of the odds is exactly - 2,94.

These results are summarized in Table 3.1.

Table 3.1 - Calibration

	Threshold	Set membership score	Odds of membership	Natural log of the odds
Full membership	15	0,95	19	2,944
Full non-membership	3	0,05	0,053	-2,944
Cross-over point	9	0,5	1	0,000

In order to compute the calibrated value of the membership degree of a case in a target set, it is important to calculate the deviations of raw scores from the (previously specified) cross over point. For instance, with regard to Italy, the statutory amount of paternity leave corresponds to one day; therefore, the deviation score from the cross-over point corresponds to -8 (i.e., 1 - 9 = -8). Afterwards, the "cross-over centred" data need to be translated into the metric of log odds. To that end, the procedure differs according to whether the values are above or below the cross-over point. If cases are above the cross-over point, the values corresponding to the metric of log odds result from the multiplication of deviation scores (i.e., -8) by the ratio of the log odds (associated with the threshold of full membership) to the deviation score of full membership from the cross-over point (i.e., 2.94 / (15-9) = 2.94 / 6 = 0.49). If cases are below the cross-over point, the values corresponding to the metric of log odds result from the multiplication of deviation scores (i.e., -8) by the ratio of the log odds (associated with the threshold of full non-membership) to the deviation score of full non-membership from the cross-over point (i.e., -2.94 / (3-9) = -2.94 / -6 = 0.49). Since Italy is below the cross-over point, the second procedure is applied; thus, the rescaled value that reflects the log odds of membership in the set of "EU countries with high level of paternity leaves" corresponds to -3.92 (i.e., (-8 * 0.49) = -3.92). These procedures are summarized in formulas *(3.1.3)* and *(3.1.4)*.

Formula 3.1.3 - Rescaling values (above the cross-over point) into the metric of log odds

$$Dev. score \times \frac{Log\ odds\ associated\ with\ the\ threshold\ of\ full\ membership}{(Full\ membership - Cross\ over\ point)}$$

Formula 3.1.4 - Rescaling values (below the cross-over point) into the metric of log odds

$$Dev. score \times \frac{Log\ odds\ associated\ with\ the\ threshold\ of\ full\ non\ membership}{(Full\ non\ membership - Cross\ over\ point)}$$

The last step requires the transformation of the log odds into values that reflect the degree of membership in the target set. To that end, Ragin (2008c) suggests the formula *(3.1.5)*. In the case of Italy, the degree of membership in the set of "EU countries with high level of paternity leaves" corresponds to 0.01 (i.e., $e^{-3.92}/(1 + e^{-3.92}) = 0.01$). Table 3.2 shows the results for all countries.

Formula 3.1.5 - Converting log odds to scores

$$Degree\ of\ membership = \frac{e^{log\ odds}}{(1 + e^{log\ odds})}$$

Table 3.2 – Calibration of conventional variables in fuzzy sets

Countries	Statutory Paternity Leaves	Deviation scores from the cross over point	Values rescaled into the metric of log odds	Degree of membership in the set of "EU Countries with high level of paternity leave"
Austria	0	-9	-4,41	0,01
Belgium	3	-6	-2,94	0,05
Bulgaria	15	6	2,94	0,95
Cyprus	0	-9	-4,41	0,01
Czech Republic	0	-9	-4,41	0,01
Germany	0	-9	-4,41	0,01
Denmark	14	5	2,45	0,92
Estonia	10	1	0,49	0,62
Greece	2	-7	-3,43	0,03
Spain	15	6	2,94	0,95
Finland	18	9	4,41	0,99
France	14	5	2,45	0,92
Hungary	5	-4	-1,96	0,12
Ireland	0	-9	-4,41	0,01
Italy	1	-8	-3,92	0,02
Lithuania	28	19	9,31	1,00
Luxembourg	2	-7	-3,43	0,03

Latvia	10	1	0,49	0,62
Malta	1	-8	-3,92	0,02
The Netherlands	2	-7	-3,43	0,03
Poland	14	5	2,45	0,92
Portugal	10	1	0,49	0,62
Romania	5	-4	-1,96	0,12
Sweden	10	1	0,49	0,62
Slovenia	90	81	39,69	1,00
Slovakia	0	-9	-4,41	0,01
United Kingdom	14	5	2,45	0,92

Truth Table. As previously noted (see chapter 2), in formal logic a truth table contains all possible combinations of simple statements (*n*) with two truth-values (true and false) and it is particularly useful for determining the truth values of a compound statement. Denoting with *k* the number of causal conditions, and considering that each single condition can take two values (0 if it is absent, and 1 if it is present), in QCA, truth tables represent all the logically possible *AND* combinations of these conditions, i.e. all logically possible causal arguments (Ragin, 2009; Schneider and Wagemann, 2012). Therefore, the number of all possible combinations corresponds to the value 2^k. Since each combination constitutes one row of the truth table, the total amount of rows is 2^k. Each row of the table is called "a *configuration* and represents a unique combination of *k values*" (Thiem and Duşa, 2013, p. 506, emphasis in the original).

Cases are assigned to each row of the truth table when they have the highest membership in that row. With crisp sets, cases can belong to only one row of the truth table, because if a case has a full membership (1) in one row, then it has a full non-membership (0) in the remaining rows; conversely, with fuzzy sets, cases have a partial membership in every combination of causal conditions (Ragin, 2009; Schneider and Wagemann, 2012). Ragin (2009) refers to fuzzy sets representing conditions as a multidimensional vector space with 2^k corners. Consequently, the rows of the truth table reflect the corners of the multidimensional vector space defined by the causal conditions (Ragin, 2000), and each corner corresponds to a combination of causal conditions, where the value of conditions are either 0 (full non-membership), or 1 (full membership), i.e. the two extreme values of a fuzzy set (Schneider and Wagemann, 2012). For instance, let 4 be the number (*k*) of causal conditions, then the corners of the vector space are 16 (i.e., 2^4). Every corner corresponds to a combination of these four causal conditions with the two extreme values, i.e., 0001, 0100, 0011, 1111, and so on.

However, since fuzzy sets lead cases to have a partial membership in every combination of causal conditions, this means that cases can have varying degree of membership in every corner of the multidimensional vector space (Ragin, 2009). For this reason, it is important to establish to which corner of this space a case most belongs and to assess the distance of cases from the corners of the vector space (Schneider and Wagemann, 2012). On the one hand, the membership of each case in a corner can be

calculated by applying the rules of fuzzy algebra. In detail, the rule of the minimum score is applied (see § 2.2.3): the membership score of a case in a conjunction of two causal conditions *A* and *B* (i.e., A * B) stems from the minimum value between the membership score that the case holds in A and the membership score that it holds in B. An important property of fuzzy sets is that any case can have a membership score greater than 0.5 in one and only one of the 2^k possible combinations of causal conditions. Schneider and Wagemann (2012, p. 100) refer to this property as the "golden rule for fuzzy sets". A membership score of a case that is higher than 0.5 in a specific combination of conditions suggests that the case is "more in than out" the conjunction. In this way, it identifies the corner of the vector space, i.e. the row of the truth table, to which the case mostly belongs (Ragin, 2009; Schneider and Wagemann, 2012). In sum, cases are assigned to truth table rows calculating the number of cases with greater than 0.5 membership score.

A further step for constructing a truth table is to define the value of the outcome for each row. This process essentially consists in evaluating the presence of subset relations. Indeed, each row represents a combination of conditions that can be considered sufficient for the outcome if the membership score of cases in the combination (i.e. in the row of the truth table) is smaller than or equal to the membership that cases hold in the outcome set. In other words, this means that the combination of conditions is a subset of the outcome and it is sufficient for the outcome. If this criterion is satisfied the value of the outcome is set to 1; conversely, it is set to 0 (Schneider and Wagemann, 2012). This particular outcome set has been defined "inclusion" and it represent "a summary measure of the degree to which the hypothesis that the configuration is a subset of the outcome set can be preliminary considered as true" (Thiem and Duşa, 2013, p. 507). Definitively, a truth table containing all logically possible combinations of causal conditions with two truth-values (1 and 0) is obtained.

Finally, the designation of the number of causal combinations that are relevant for the outcome should be made according to a reasonable frequency threshold: when enough cases have a membership score greater than 0.5 in a combination, it is reasonable to consider that combination as relevant for the outcome (Ragin, 2009). When the total amount of cases is relatively small, the frequency threshold could be 1 or 2 (Ragin, 2008b). As a consequence, when the combinations of conditions present a lack of cases with a membership score greater than to 0.5, they are treated and labelled as "reminders" in the following steps of the analysis (Ragin, 2009). Essentially, reminders correspond to configurations for which any statement about subset relation cannot be formulated for the lack of empirical evidence (Thiem and Duşa, 2013). In practical terms, they represent the logically possible combinations that are not empirically observed (Ragin, 2009).

Analysis of truth tables. The analysis of the truth table corresponds to the analysis of sufficiency. In line with Schneider and Wagemann (2012), each row of the truth table in which the outcome shows the value 1 can be considered a sufficient pathway for the outcome. However, when the number of causal condition is very large, the total amount of their logically possible combinations may be particularly copious and it may present redundant conditions. For this reason, the number of combinations of causal conditions needs to be logically reduced. Since these combination represent forms of Boolean functions, they can be reduced by applying the laws of Boolean algebra (see § 2.2.3). A valuable method for minimizing Boolean functions is the use of the Quine – McCluskey algorithm, or "method of prime implicants" (Quine, 1955; McCluskey, 1956). This algorithm is particularly appreciated for its reliability (Ragin, 2008b) and it is considered the most well known procedure for the minimization of Boolean function (Thiem and Duşa, 2013). The "primitive expressions" of the truth table correspond to the conjunctions of causal conditions that are sufficient for the outcome, exactly those conjunctions that correspond to the rows of the truth table where the outcome is set equal to 1 (Schneider and Wagemann, 2012, p. 105). The overall information that is contained in the truth table corresponds to a Boolean function, which stands for the union of the sufficient conjunctions. More exhaustively, Boolean functions consist of "canonical union of fundamental intersections" and their minimization aims to eliminate irrelevant and redundant conditions, which can be omitted as they do not affect the outcome (Thiem and Duşa, 2013, p. 507). Through the use of the Quine – McCluskey algorithm similar conjunctions are compared and reduced in the so-called "prime implicants", a term that refers to conditions that cannot be simplified further. The resulting solution term correspond to the conjunction of prime implicants that are linked by the logical operator OR (Schneider and Wagemann, 2012). Therefore, the solution formula with prime implicants is further reduced in a "minimal union" of combinations of causal conditions that are sufficient for the outcome under investigation (Schneider and Wagemann, 2012; Thiem and Duşa, 2013). This process of logical minimization can be automatically computed through the fs/QCA software, which makes use of the so-called "truth table algorithm" that is in turn based on the Quine – McCluskey algorithm.

While the test of sufficiency stems from the analysis of the truth table, the analysis of necessity follows a separate procedure. Considering that a condition is defined as necessary if it is always present whenever the outcome occurs, the test of necessity makes reference to those cases that show the outcome (Schneider and Wagemann, 2012). Once these cases are found, it is possible to verify if one or more conditions are always present across cases; if this requirement is satisfied, then conditions can be considered as necessary for the outcome. Clearly, the analysis of necessary conditions requires to investigate single conditions, rather than their conjunction through the logical operator AND. The reason stems from the fact that necessity implies that the

outcome is a subset of the causal condition (Ragin, 2008b). In fuzzy sets logic, the outcome is a subset of a causal condition if the membership scores of cases in the outcome set are less than or equal to their respective membership scores in the set of the causal condition (Ragin, 2008b). However, the membership score of a case in a conjunction of two causal conditions corresponds to the minimum value across the conditions. This means that it is unlikely that the conjunction can pass the test of necessity, since necessary conditions should hold a value higher than or equal to the value in the outcome set (Schneider and Wagemann, 2012). Therefore, non-necessary conditions cannot become necessary through their conjunction: a conjunction of conditions is necessary only if it is constituted by conditions that individually pass the test of necessity (Schneider and Wagemann, 2012).

Assessing consistency. Since a condition is sufficient if, whenever it occurs across cases, the outcome is also present, this means that all cases showing the condition should show the outcome, i.e. the condition is a subset of the outcome. A perfect subset relation requires that *all* cases in which the condition is present (1), the outcome is also present (1). Clearly, empirical evidence may deviate from this kind of subset relations. For this reason, it is important to evaluate the degree to which the empirical evidence is consistent with set theoretic relation (Ragin, 2006, 2009). From this perspective, "consistency provides a numerical expression for the degree to which the empirical information deviates from a perfect subset relation" (Schneider and Wagemann, 2012, p. 129). It can be assessed with regard to single sufficient conditions, as well as for more complex configurations (Schneider and Wagemann, 2012). According to Ragin (2006), fuzzy set-theoretic consistency can be calculated with the following formula:

Formula 3.1.6 – Consistency of sufficient conditions

$$Consistency \ (X_i \leq Y_i) = \frac{\sum min(X_i, Y_i)}{\sum X_i}$$

where X_i corresponds to the membership scores of cases in the set of a causal condition, while Y_i corresponds to the membership score in the outcome set. In fuzzy logic, a causal condition is sufficient for the outcome, if fuzzy membership scores of cases in the set of the causal condition are less than or equal to the fuzzy membership in the outcome in the outcome set (Ragin, 2008b). Looking at the formula, when all cases have a fuzzy score in the set of causal condition that is smaller than or equal to their fuzzy score in the set of the outcome, the numerator corresponds to the sum of all values X_i, which constitutes the same term of denominator. In this case, the formula returns a value of 1, and it refers to a perfect consistent sufficiency (Schneider and Wagemann, 2012, p. 124-126). A value of consistency of 0.5 means that about half of cases contradict the statement of sufficiency (Schneider and Wagemann, 2012); thus the

minimum recommended threshold to accept a solution as consistent is 0.75 (Ragin, 2006; 2008a). Overall, the assessment of consistency of sufficient conditions is of great importance to establish which rows of the truth table can be analyzed, and then logically reduced, as sufficient conditions (Schneider and Wagemann, 2012).

Following a similar logic, consistency can be assessed also with regard to necessary conditions and it indicates the extent to which empirical evidence is consistent with the statement of necessity. Since a condition is necessary if it is always present whenever the outcome occurs across cases, this means that all cases showing the outcome should always show the condition, i.e. the outcome is a subset of the condition. According to Ragin (2006), the consistency of necessary conditions can be calculated with the following formula:

Formula 3.1.7- Consistency of necessary conditions

$$Consistency\ (Y_i \leq X_i) = \frac{\sum min(X_i, Y_i)}{\sum Y_i}$$

In fuzzy logic, a causal condition is necessary for the outcome, if fuzzy membership scores of cases in the outcome set are less than or equal to the fuzzy membership in the set of the causal condition. When all cases have a fuzzy score in the set of the outcome that is smaller than or equal to their fuzzy score in the set of the causal condition, the formula *(3.1.7)* returns a value of 1, because numerator and denominator come to converge. Generally, a threshold of consistency of at least 0.9 is recommended for statement of necessity (Ragin, 2006).

Assessing coverage. In addition to consistency, another important parameter of fit in fs/QCA is coverage. Indeed, the actual relevance of a sufficient condition or a causal combination depends on how many cases it covers. When conditions cover very few cases, it is reasonable to interpret them as not empirically important conditions (Ragin, 2006). For this reason, defining a measure of coverage essentially consists of comparing the set of causal condition and the set of outcome in terms of their size. From this perspective, coverage provides a numerical expression of the empirical importance of a condition for explaining a given outcome (Schneider and Wagemann, 2012). In other words, coverage suggests how many cases with the outcome are the results of a particular causal condition. According to Ragin (2006), it can be calculated with the following:

Formula 3.1.8 – Coverage of sufficient conditions

$$Coverage\ (X_i \leq Y_i) = \frac{\sum min(X_i, Y_i)}{\sum Y_i}$$

Moreover, this parameter of fit involves three different notions of coverage, to which the same formula *(3.1.8)* can be applied (Schneider and Wagemann, 2012). Specifications of coverage are closely related to the occurrence of *equifinality*, which refers to the presence of different conditions or combinations of causal condition that equally lead to the outcome. In detail, the so-called "raw coverage" indicates how much of the outcome is covered by single paths. The "solution coverage" instead expresses how much of the outcome is covered by the overall *equifinal* and *conjunctural* solution term. Finally, the "unique coverage" points out how much of the outcome is uniquely covered by a specific path. In practical terms, the unique coverage of a condition or combination of conditions corresponds to the value of the solution coverage minus the value of coverage related to all pathways that lead to the outcome except the path whose unique coverage have to be assessed (Schneider and Wagemann, 2012). In view of that, the essential scope of partitioning coverage in the analysis of fuzzy sets "is to assess the relative importance of different combinations of causally relevant conditions" (Ragin, 2006, p. 305). Last aspects to be underlined refer to the choice of threshold of coverage. Actually, thresholds have not great importance in the case of coverage. Although a low coverage suggests that the outcome is little covered by consistent conditions, this circumstance can have theoretical and substantive importance for researchers (Schenider and Wagemann, 2012). The choice between values of consistency and coverage often represents a trade off for researchers. As underlined by the formula *(3.1.8)*, coverage may increase due to the inclusion of cases that are inconsistent with the statement of sufficiency. For this reason, coverage should be assessed after the definition of a consistency threshold, i.e. after it has been established that conditions are consistent subsets of the outcome in question (Ragin, 2006). Definitively, coverage must be calculated only for those conditions that pass the test of sufficiency (Ragin, 2006).

With regard to necessary conditions, coverage can be interpreted as a measure of their relevance. Given that in the case of necessary conditions, the outcome is a subset of the cause, measuring the degree of coverage is useful to establish whether the outcome set is much smaller than the condition set (Ragin, 2006; Schneider and Wagemann, 2012). According to Ragin (2006), the formula of coverage of necessary conditions is the following:

Formula 3.1.9 - Coverage of necessary conditions

$$Coverage\ (Y_i \leq X_i) = \frac{\sum min(X_i, Y_i)}{\sum X_i}$$

However, this formula captures only the form of trivialness, owing to the size of sets.

Another form of trivialness that should be avoided refers to the case of constancy of the necessary condition, i.e. when a conditions is assessed as a necessary condition only because it occurs in most of the cases (Schneider and Wagemann, 2012). In order to avoid this form of trivialness Schneider and Wagemann (2012) propose the use of the formula *(3.1.10)*. If a necessary condition is a constant across cases, this formula returns a value that is close to 0, meaning trivialness; conversely, it returns a value that is close to 1, meaning relevance.

Formula 3.1.10 - Relevance of Necessity (Schneider and Wagemann)

$$Relevance\ of\ Necessity\ = \frac{\sum(1-x)}{\sum(1-min(x,y))}$$

The use of fs/QCA software packages allows for the calculation of both consistency and coverage automatically.

Solutions. The truth table analysis produces three solutions with different levels of complexity according to the way they deal logical remainders. As noted above, logical reminders represent "missing configurations", i.e. logically possible combinations without empirical cases, and they are quite the rule in comparative social science research since social phenomena are limited in their diversity (Ragin and Sonnett, 2004). Unlike statistical methodology, in which a missing value refers to empirically observed cases but without information on one or more variables, logical reminders refer to logically possible but empirically non-existing cases (Schneider and Wagemann, 2012). Hence, the way in which logical remainders are handled leads to different solutions, namely the complex, parsimonious and intermediate solution. In a set-theoretic perspective, assumptions about logical reminders are permissible, as long as they are made in a conscious and transparent manner for justifying counterfactual claims (Schneider and Wagemann, 2012).

The most *complex* solution term is obtained by excluding the logical remainders, i.e. without making assumptions about them (Ragin, 2008). Since complex solution is exclusively derived from empirical observation (without counterfactuals), it represents a conservative solution (Schneider and Wagemann, 2012). The *intermediate* solution requires a counterfactual analysis based on theoretical assumptions about the outcomes and their plausibility. In this way, "only the logical remainders that 'make sense' given the researcher's substantive and theoretical knowledge are incorporated into the solution" (Ragin, 2009, p. 111). For this reason, it is claimed that intermediate solutions arise only from *easy* counterfactuals, which refer to those counterfactuals that are substantiated by both empirical evidence and theoretical knowledge (Schneider and Wagemann, 2012). Conversely, *difficult* counterfactuals are based only on the empirical evidence at hand (Schneider and Wagemann, 2012). Finally, the most *parsimonious*

solution term is computed by including logical remainders that help to generate a logically simpler solution through simplifying assumptions that include both easy and difficult counterfactuals (Ragin, 2008c; Schneider and Wagemann, 2012).

For the purpose of this study, the following sections apply these main procedures to the comparative analysis of the 27 EU countries. In detail, § 3.2 describes the criteria that were used in the selection of cases and causal conditions in order to define the research setting, while § 3.4 provide a detailed description of the criteria that were used for calibrating the sets of causal conditions and the outcome set. The remaining steps, which are more closely related to the analytical moment of fs/QCA, are developed in the next chapter.

3.2 Selection of cases and causal condition

In line with the aforementioned requirements, the selection of cases and conditions to be included in the empirical investigation was particularly consistent with both substantive and theoretical interests of this research and it was performed through a systematic dialogue between ideas and evidence. This section describes the theoretical information that has driven these choices.

With regard to the selection of causal conditions, it has been widely discussed in § 2.3.2. Overall, the causal conditions were elected according to their inherence with the theoretical arguments of this study. To that regard, the review of the literature (chapter 1) has deeply argued the extent to which the characteristics of welfare provisions, regulatory policies, female labour force and country-level gender equality can fit together to bring more women on board. In detail, single country-level causal conditions were established by considering their significant impact on gender diversity on corporate boards, as well as their relative significance in unravelling the gendered nature of institutions. They are paternity leaves, maternity leaves, parental leaves, and childcare services (for welfare institutions); female employment and female part-time employment (for labour markets); level of gender equality in the overall society (for national cultures). Moreover, regulatory policies about board gender quotas are included in the comparative analysis of national configurations in order to investigate their necessity and/or sufficiency in the existing national configurations

Looking at the selection of cases, the choice of European Union countries as units of analysis stems from two main motivations. Firstly, the performance in terms of female representation on boards differs greatly across EU countries. These differences are primarily related to different economic, cultural and regulatory environments (Kang *et al.*, 2007). Therefore, exploring this heterogeneity is very meaningful as it allows for assessing whether a relative predominance of a particular national model for women on boards exists. Secondly, despite this heterogeneity, European Union institutions have created a common commitment and a pervasive debate across EU countries about the

initiatives that are more appropriate to have more women on boards. On this wake, the European Union has asked publicly listed companies to increase the female representation on boards to 40% within 2020. To that end, a number of countries have introduced some forms of mandatory gender quotas, while other countries have opted for voluntary or recommendatory initiatives (Huse and Seierstad, 2014). At the same time, the efforts of the European Union have addressed the overall deconstruction of gender stereotypes that limit female participation in the labour market as well as female career advancement. This is quite consistent with the theoretical arguments argued in this research. In detail, EU institutions have recognized the disproportional involvement of women in part-time jobs and the persistency of traditional caregiver beliefs in national cultures. For this reason, the European Parliament has enacted a resolution to deconstruct gender stereotypes[58], by establishing a major number of inexpensive and high-quality childcare and eldercare facilities; suitable forms of parental leave for both fathers and mothers; and binding quotas for increasing the presence of women in positions of responsibility in politics and businesses. Taken together, these circumstances make EU countries a suitable scenario to be explored in order to investigate the existence of institutional complementarities in shaping female representation on boards and evaluate whether regulatory policies that were enacted in some countries might be transferred in other countries.

EU countries were compared from January 2013 to June 2013. For this reason, although currently the number of members of the European Union is of 28, Croatia was excluded because it has become an EU member on July 2013. Therefore, the number of cases that were included in the analysis is 27[59]. In this way, they represent *de facto* a population rather than a sample. As noted above, EU countries are compared as configurations of specific national conditions that may have a conjunctural causal relation with the outcome (i.e. a higher number of women on boards of directors). The next section details data and measures that were chosen to quantitatively express both causal conditions and outcome, while § 3.4 discusses the criteria that were used for their calibration in fuzzy sets.

---

[58] European Parliament resolution of 12 March 2013 on eliminating gender stereotypes in the EU. Available at: http://www.europarl.europa.eu/sides/getDoc.do?pubRef=-//EP//TEXT+TA+P7-TA-2013-0074 +0+DOC +XML+V0//EN

[59] Definitively, EU 27 includes: Austria (AT), Belgium (BE), Bulgaria (BG), Cyprus (CY), Czech Republic (CZ), Denmark (DK), Estonia (EE), Finland (FI), France (FR), Germany (DE), Greece (EL), Hungary (HU), Ireland (IE), Italy (IT), Latvia (LV), Lithuania (LT), Luxembourg (LU), Malta (MT), Netherlands (NL), Poland (PL), Portugal (PT), Romania (RO), Slovakia (SK), Slovenia (SI), Spain (ES), Sweden (SE) and United Kingdom (UK).

3.3 Measures and data description

The quantitative expression of both causal conditions and outcome has required a deepened documentary analysis (Bailey, 1994; Payne and Payne, 2004; Scott, 1990). Similarly to the investigation on the variety of forms of gender regulation for boards of directors (see § 1.2.1), the choice of documentary sources was made by following the control criteria proposed by Scott (1990). In detail, texts, statistics and documents were chosen according to their authenticity, credibility, representativeness, and meaning. These documental sources primarily refer to legal texts, national laws, and official documents that contained information at both national and European level. Their official and public nature has contributed to the reliability of this documentary analysis.

Below is a more detail description of the resulting review and data collection for each main set. While sections 3.3.1, 3.3.2, 3.3.3, and 3.3.4 present the description of measures and data concerning the elected causal conditions, section 3.3.5 refers to the outcome. Data matrix is shown in Table 3.3.

3.3.1 Welfare states

The national characteristics of welfare states are expressed in terms of maternity leave, paternity leave, parental leave and childcare services.

With regard to parental leave policies, it is important to note that they are designed very differently across EU countries. For this reason, this analysis has adopted very careful criteria in order to ensure the comparability of welfare institutions between EU countries. In detail, both for maternity and paternity policies, it was considered only the mandatory amount of maternity and paternity leave that was enacted in each country. Clearly, the laws written into the books can differ greatly from the actual usage of maternity and paternity leave policies. However, they can be interpreted as a condition that precedes the possibility of actually taking leave. This perspective is consistent with the rationale underlying the present research. Indeed, legal provisions are able to mirror the gendered nature of welfare policies, which can shape the prevailing role of women in family responsibilities and, more generally, the division of gender roles in other institutions. Moreover, an important contribution of adopting a fuzzy logic in this comparative analysis is that it allows for taking into account the level of generosity of welfare policies. By using a more fine-grained measure of these attributes, this analysis goes beyond than their mere presence (1) or absence (0).

According to the definition provided by OECD Employment Outlook (1995, p. 174), maternity leave "leave granted only to mothers for a limited period of time around the time of childbirth (although it is possible for the father to take the post-natal part of the leave in extreme circumstances, such as the mother's death or illness)". Since the aim of maternity leave is to protect the health of mothers and newborn children, it is generally established prior to and immediately after childbirth (also known as pre-birth leave and

post-birth leave). Most of the EU countries have compulsory pre-birth leave and they provide public income support payments during this period. In some countries, maternity leave is included in general parental leave schemes (e.g. Sweden, Germany). Paternity leave instead is an employment-protected absence for employed fathers. It has been defined as "leave granted only to fathers for a limited period around the time of childbirth (not necessarily immediately after birth, but within a short period thereafter)" (OECD Employment Outlook, 1995, p. 174). Generally, it is much shorter than maternity leave. Because of the very short period, fathers on paternity leave often continue to receive full wage payments. In some countries, paternity leave is part of the parental leave schemes (father's quotas), rather than established as a separate right (OECD Family database, 2012). The present analysis considered paternity leave that is available only to fathers. Finally, OECD Employment Outlook (1995, p. 174) defines parental leave as "long-term leave available to parents to allow them to take care of an infant or young child a period of time. This is usually granted in addition to maternity/paternity leave". Parental leave essentially consists of paid or unpaid leave to parents for childcare. It is often a supplementary provision of leave respect to specific maternity and paternity leave periods, and it usually follows the period of maternity leave. The present analysis considered only the amount of paid parental leave, intended as the sum of both mother and father quotas. As noted above, data concerning parental leave policies were collected through a deepened analysis of legal texts, laws, and official documents, containing information at both national and European level. A comprehensive list of these information sources includes: Burri and Prechal (2013); CEPR Center for Economic and Policy Research (Ray, 2008: Ray *et al*., 2009); Council of Europe Family Policy Database (2009); European Commission (2012b); European Parliament studies (Thomsen and Urth; 2010a, 2010b; Juhlin and Marsh, 2010; Davaki, 2010; Thevenon, 2010); OECD (2012a; 2012b); Eurostat Statistical Books (Margherita *et al*., 2009); International Labor Organization (2010, 2012); Moss (2012); World Economic Forum (2013).

With regard to the provision of childcare services, data were taken from the EU-SILC (2012), which is a database containing information about EU statistics on income and living conditions. This database was implemented by Eurostat, the statistical office of the European Union that represents the main source of reference for comparative statistics in the European Union. EU-SILC (2012) provides information about the availability of childcare services across the EU countries. In general, formal childcare services were referred to four variables: 1) pre-school or equivalent education; 2) compulsory education; 3) centre of childcare services outside school hours; and 4) day-care centre of childcare that are organized or controlled by public or private structure. The research methodology applied in the EU-SILC database has led to classify formal childcare services according to two aspects: 1) the age of children for which they are provided; and 2) their duration and they are expressed in term of percentage over the

population of each age group. The present analysis makes reference to formal services that have a duration higher or equal to 30 hours and that are provided for children aged fewer than 3 (0-2 years). In line with the research rationale, the more extended the childcare services are, the more "women-friendly" is the welfare state of a country. Clearly, the choice of an age ranging from 0 to 2 years for children reflects the importance of having childcare services in a period that requires women to spend more time for childcare.

3.3.2 Labour Markets

The characteristics of labour markets are expressed in terms of the total amount of female labour force and the percentage of women involved in part-time jobs. The term "part time workers" refers to employees whose normal hours of work are less than the normal amount of hours of work of a comparable fulltime worker. Generally, hours of work are calculated on a weekly basis or on average over a period of employment of up to one year (Eszter, 2011).

Data regarding female participation in labour markets were taken from the Global Gender Gap Report of the World Economic Forum (2013). On the one hand, measures of female employment refer to the proportion of a country's working-age (15-64) population that engages in the labour market. On the other hand, female part-time employment rates refer to the percentage of women that is involved in part time jobs of the total female employment in a country (World Economic Forum, 2013).

3.3.3 National cultures

For the purpose of this study, national cultures correspond to the overall level of gender equality in society. Data concerning the degree of gender equality that features a given social system were taken from the Global Gender Gap Report of the World Economic Forum (2013) and they correspond to the value of the Global Gender Gap Index for each country. This index is particularly meaningful for capturing the presence and the magnitude of gender-based disparities. Indeed, it takes into account the presence of gender inequality across four crucial spheres, namely health, education, economic and politics. Moreover, it is completely independent from the levels of development of countries, because it is rather obvious that rich countries provide better opportunities in terms of education and health to individual, for example. Finally, it is based on measures of outcome rather than on measures of inputs. This property leads the Global Gender Gap Index to focus on the results that have been achieved in outcome indicators (such as, number of legislators, managers or senior officials), rather than in policy indicator (such as, the length of maternity leave).

Overall, this index ranks countries according to the presence of gender equality in their main institutions, hence taking values that range from 0 (absence of gender equality) and 1 (presence of gender equality).

3.3.4 Regulatory policies for female representation on boards

As shown in Chapter 1 (§ 1.2.1), gender regulatory policies for female representation on boards differ greatly across EU countries. Data concerning this variety of forms for gender balance on boards of directors were collected by making reference to several sources, such as the national factsheets provided by the European Commission (2013), the progress report on women and men in decision-making provided by the European Commission (2012a), and to previous academic contributions, such as Terjesen *et al*. (2014). The main differences across countries are shown in Table 1.1. However, since countries are compared from January 2013 to June 2013, the analysis did not take into accounts regulatory policies that were introduced after this time, such as the case of the enactment of gender quotas in Germany, with effect from 1 January 2016). Moreover, it did not take into account temporary rules (such as the case of The Netherlands, where gender quotas were enacted on January 2013, but they will expire on January 2016). The qualitative differences across countries were quantitatively expressed by classifying three main types of gender regulations for corporate boards. More exhaustively, the main distinction refers to the presence of hard forms of gender regulation (typically countries with gender quotas) and more soft forms of regulations (such as countries with self-regulatory policies or codes of good governance). Therefore, regulatory policies aimed to foster female representation on boards of directors were numerically expressed through three values. Exactly, the value of 1 was assigned to the EU countries that have enacted gender quotas; the value of 0.5 was assigned to EU countries with some forms of self-regulation; and, the value of 0 was assigned to EU countries that did not adopt any of the foregoing forms of regulation.

3.3.5 Outcome

This study takes a higher number of women on boards of directors as the outcome of interest, by conceiving it as the result of a multiple conjunctural causal relation between several causal conditions. Data concerning the outcome were taken from the database on women and men in decision-making provided by the European Commission (2012c). The aforementioned database was last updated on October 2012 and it contains information on 582 companies, corresponding to about 5.910 board members. According to the research methodology followed in constructing the database, companies correspond to the largest publicly listed companies in each of the 27 European member states (maximum 50 per country) and they are members of the primary blue-chip index, which covers the largest companies by market capitalization

and/or market trades (European Commission, 2012c). As described in the methodological section of the database, non-national companies are excluded, as the data for each country cover only companies registered in that country. Moreover, in countries where the blue chip index covers a large number of companies, only the 50 largest are taken into account. Conversely, in countries where the blue chip index does not cover enough companies, companies with the next largest market capitalization are taken into account when possible (European Commission, 2014). Generally, board members refer to president and members of the highest decision-making body. In case of two-tier governance system, the two highest decision-making bodies are usually referred to as the supervisory board and the management board, while in case one-tier systems they refer to the board of directors and executive/management committee (European commission, 2014). However, individuals sitting on more than one decision-making body are counted only once, while employee representatives are excluded (European Commission, 2014).

This analysis adopts the percentage of women on boards of directors across countries (rather than absolute values) with the aim to express quantitatively how large the number of women on boards is with respect to the total number of board members. Furthermore, since this research aims to assess the attainment of board positions by women through their career paths, rather than their performance in the boards of directors, the present analysis takes into account data from both executive and non-executive board members.

Table 3.3 – Data Matrix

EU Countries	Women on Boards (%)	Introduction/ Improvement of Maternity Leave	Statutory Maternity Leave (days)	Introduction/ improvement of Paternity Leave	Statutory Paternity Leave (days)	Paid Parental Leave (days)	Formal Childcare Services (%)	Female Part Time Employment (%)	Female Labour Force (%)	Global Gender Gap Index	Forms of Regulation
	WOB		ML		PL	PARL	FCHs	FPTE	FE	GGGI	REG
AT	11,9	1979	112	1989	0	540	7	33	69	0,7266	0,5
BE	12,9	1971	105	2002	3	180	27	32	62	0,7809	1
BG	11,6	1987	227	2009	15	547	8	3	63	0,7444	0
CY	7,7	1988	126	N/A	0	0	19	13	67	0,6741	0
CZ	16,4	1968	196	N/A	0	1095	1	7	61	0,6737	0
DE	17,9	1878/1968	98	N/A	0	1092	15	38	71	0,778	0,5
DK	20,8	1892/1960	126	1984	14	224	59	25	76	0,8025	0,5
EE	7,8	1999	140	2004	10	435	14	12	71	0,7017	0
EL	7,9	1921/1969	119	2000	2	0	15	14	58	0,6784	0
ES	12,3	1900/1969	112	1931/1980/2007	15	0	15	22	66	0,7325	1
FI	28,6	1978	105	1971	18	158	22	16	73	0,8453	1
FR	25,1	1909/1969	112	2002	14	1092	23	22	66	0,7588	1
HU	7,4	1969	168	2002	5	924	6	6	57	0,6759	0
IE	8,7	1969	182	N/A	0	0	11	39	62	0,785	0
IT	11	1950/1972	140	2012	1	330	11	31	51	0,6973	1
LT	17,8	1995	126	1995	28	238	5	10	69	0,7208	0
LU	9,7	1969	112	1962	2	364	27	30	60	0,7333	0,5
LV	28,2	1996	112	2002	10	1080	19	11	71	0,7601	0
MT	3,5	1996	98	1996	1	0	1	26	43	0,6707	0
NL	21,5	1889/1966	112	2001	2	0	7	61	73	0,773	0,5
PL	11,8	1924/1972	112	2010/2012	14	1092	5	12	59	0,7051	0,5
PT	7,4	1963	120	1999	10	0	34	14	70	0,7243	0,5
RO	11,9	2002	126	2004	5	594	4	12	56	0,6936	0
SE	25,5	1963/1974	98	1980	10	420	35	18	77	0,8165	0,5
SI	18,7	1993	105	1993	90	260	36	11	67	0,7443	0
SK	13,8	1968/1993	98	N/A	0	1092	4	6	61	0,6806	0
UK	18,8	1948/1976	182	2003	14	0	3	39	69	0,7383	0,5

Source: Own elaboration from "Iannotta et al. (2015) Institutional Complementarities and Gender Diversity on Boards: A Configurational Approach. Corporate Governance: An International Review, doi: 10.1111/corg.12140".

3.4 Criteria of calibration

Criteria for calibrating the target sets were elected according to theoretical and substantive knowledge at hand, thus representing criteria external to the data. Generally, the selection of qualitative anchors for designating the membership of cases in a target set were chosen according to a number of recommendations provided by institutional international bodies. After establishing a significant anchor (for example, for full membership or full non-membership), the remaining qualitative anchors were defined according to the criterion of equal distance intervals. Below is a more detailed discussion of the criteria that were used for calibrating fuzzy sets. While § 3.4.1 describes the criteria for calibration of causal conditions in fuzzy sets, § 3.4.2 refers to the criteria that were used for calibrating the outcome.

3.4.1 Causal conditions

Maternity leave. Qualitative anchors for the calibration of maternity leave in fuzzy sets were set according to the recommendations of two important institutional bodies. On the one hand, the Recommendation 191[60] and the Maternity Leave Convention 183[61] adopted by the International Labor Organization suggest a minimum duration of maternity leave ranging from 14 to 18 weeks (Schulze and Gergoric, 2015). On the other hand, through the Directive 92/85/EEC, the European Parliament states that the duration of maternity leave should be at least of 20 weeks (Schulze and Gergoric, 2015). Therefore, the cross-over point was established according to a duration of maternity leave of 150 days, which approximately correspond to the minimum value of days recommended by the International Labor Organization and the European Parliament. Consequently, the threshold for full membership and full non-membership were defined according to equal distance intervals. In detail, 250 days correspond to the threshold for full membership in the target set, while 50 days correspond to the threshold of full non-membership in the target set. This target set was defined the set of "EU countries with high level of maternity leave".

---

[60] International Labour Organization, Maternity Protection Recommendation, 2000 (no. 191), Recommendation concerning the revision of the maternity protection recommendation, 1952, adoption: Geneva, 88th ILC session (June 15, 2000). Web source: http://www.ilo.org/dyn/normlex/en/f?p=NORMLEXPUB:12100:0::NO::P12100_INSTRUMENT_ID:312 529.

[61] International Labour Organization, Maternity Protection Convention, 2000 (No. 183), Convention concerning the revision of the Maternity Protection Convention (Revised), 1952 (Entry into force: 07 Feb 2002), Adoption: Geneva, 88th ILC session (June 15, 2000). Web source:http://www.ilo.org/dyn/normlex/en/f?p=1000:12100:0::NO::P12100_ILO_CODE:C183.

Paternity Leave. Paternity leave shows a very short duration across EU countries. Consequently, the qualitative anchors for calibrating parental leave in fuzzy set appear to be rather low. Indeed, the European Parliament have proposed that the minimum duration of paternity leave should be of two weeks, or 10 working days (Schulze and Gergoric, 2015; Thomsen and Urth, 2010). Accordingly, the criteria of calibration for paternity leave were established as follow: 15 days were assigned to the threshold for full membership in the target set. Considering the very short duration of paternity leave across countries, the enactment of more than 15 days of paternity leave is a virtuous example of welfare institutions that are more gender-neutral (although not fully gender-neutral). Following the criterion of equal distance intervals from the full membership value, the cross-over point was established at 9 days, while the threshold of full non-membership was set to a value of 3 days. This target set corresponds to the set of "EU countries with high level of paternity leave".

Parental Leave. Through the Directive 2010/18[62], the Council of Europe suggests that "the leave shall be granted for at least a period of four months and, to promote equal opportunities and equal treatment between men and women, should, in principle, be provided on a non-transferable basis. To encourage a more equal take-up of leave by both parents, at least one of the four months shall be provided on a non-transferable basis." (Clause 2, point 2). Since at least four months of parental leave for each parent are recommended, the threshold of full membership in the set of countries with a significant provision of parental leave was established to 240 days (corresponding to about eight months if we consider both parents). Consequently, the threshold for full non-membership and the cross-over point were defined according to equal distance intervals. They are 140 days and 40 days respectively. The resulting target set was called the set of "EU countries with high parental leave".

Childcare Services. Bearing in mind that the analysis makes reference to formal services that are provided for children aged fewer than 3 (0-2 years), qualitative anchors for calibrating childcare services were based on recommendation referring to this age group. The Barcelona Summit has required important objectives to EU member states in order to remove the major impediments that affect female participation in the labour force. In detail, EU member state are demanded to provide childcare services for at least

---

[62] Official Journal of the European Union. 2010. Council Directive 2010/18/EU of 8 march 2010 implementing the revised framework agreement on parental leave concluded by BUSINESSEUROPE, UEAPME, CEEP and ETUC and repealing directive 96/34/EC.

33% of children less than 3 years of age[63]. Consequently, this target was taken as the threshold of full membership in the set of countries that provide high level of childcare services, thus mirroring welfare policies that are more "women-friendly". The cross-over point and the threshold for full non-membership were defined according to equal distance intervals: 20% and 10% respectively. More exhaustively, a level of childcare services of 20% represents a point of ambiguity, since it is neither too far nor too close to the Barcelona objectives, while a level of childcare services of 10% does not meet in any way these objectives. Overall, the resulting target set corresponds to the set of "EU countries with high level of formal childcare services".

Female Employment. Qualitative anchors for the calibration of female participation in the labour force were set according to the several institutional recommendations provided by international bodies. For instance, since 75% was estimated to be full employment where everybody who wants to get a job should be able to do so, the agenda of Europe 2020 have required achieving an employment rate for women and men of 75% for the 20-64 years age group[64]. In a similar vein, according to the Lisbon Strategy, a female employment of 60% was required by 2010[65]. Taken together, these target objectives can represent the threshold for full membership of cases in the set of countries with high level of female employment. In detail, this threshold was established at 65% of female employment as it represents a middle path between what had to be done and what would be done in the coming years. Following the principle of equal distance intervals, the cross over point of maximum ambiguity was set at 45%, while the threshold for full non membership was established at 25%. Definitively, this target set corresponds to the set of "European countries with high level of female employment".

Female part-time employment. Through the Directive 81/1997, the European Union have asked member states to remove all types of discrimination against part-time workers (Burri and Aune, 2013; Eszter, 2013). As noted by Burri and Aune (2013), 32.1% of women work in part-time, while only 9% of men do so. Since this percentage negatively affects female career progression, training opportunities and gender pay gap (Burri and Aune, 2013), the value of 35% of female part time employment over the

---

[63] In detail the European Council set the targets of providing childcare by 2010 to: 1) at least 90% of children between 3 years old and the mandatory school age; and 2) at least 33% of children under 3 years of age. MEMO/08/592, Childcare services in the EU, Brussels, 3 October 2008. Available at: http://europa.eu/rapid/press-release_MEMO-08-592_en.htm .

[64] Further details on Europe 2020 can be accessed to: http://ec.europa.eu/europe2020/index_en.htm.

[65] European Commission, Commission staff working document, Lisbon strategy evaluation document, Brussels, 2.2.2010. Available at: http://ec.europa.eu/europe2020/pdf/lisbon_strategy_evaluation_en.pdf.

overall female labour force was considered as representing a strong gender imbalance in the labour market. Consequently, 35% was set as the threshold of full membership in the set of countries with high level of female employment in part time jobs. According to equal distance intervals, the cross-over point was set at 20%, while the threshold of full non-membership was established at 5%. The resulting target set corresponds to the set of "EU countries with high level of female part-time job".

Gender equality in society. Since gender equality in society is measured by the Global Gender Gap Index, it can takes values that range from 0 (absence of gender equality) and 1 (presence of gender equality). These extreme values represent respectively the threshold of full non-membership and the threshold of full membership in the set of countries with high level of gender equality in society. Therefore, the point of maximum ambiguity was set at 0.5, corresponding to the cross-over point. This set was called the set of "EU countries with high level of gender equality".

Forms of regulation. Considering that forms of regulation are measured by the value of 1 for EU countries that have enacted gender quotas, the value of 0.5 for EU countries with self-regulation, and, the value of 0 for EU countries that do not adopt any of the foregoing, the three qualitative anchors for calibrating forms of regulation were established as follow. The threshold for full membership of cases in the set of EU countries with strong forms of regulations was set at 1; conversely, the threshold for full non-membership in that set corresponds to 0. The point of maximum ambiguity should correspond to a value of 0.5. However, when the cross-over point is established at 0.5, the calibration becomes problematic. Looking at cases, it is important to underline that many countries take the value 0.5. Since their fuzzy membership score corresponds to 0.5, they are considered neither in nor out in the target set, thus being conceptually ambiguous. In line with these observations, the cross-over point related to the forms of regulation was established at 0.55, in order to mitigate this ambiguity. According to the principle of equal distance intervals, the threshold for full membership was set at 0.9, while the threshold for full non-membership was established at 0.2. The result is the set of "EU countries with a high form of regulation for female representation on boards".

3.4.2 Outcome

Qualitative anchors for the calibration of the outcome into fuzzy sets were established according to several institutional recommendations. Firstly, the European Commission has presented a plan aimed to gradually increase female representation on boards. The target for publicly listed companies was a representation of at least 30 % for each gender by 2015 and 40% by 2020. Secondly, the European Women's Lobby have required member states to follow the example of Norway and enact gender quotas legislation aimed to increase the number of women on boards to 40% by 2015 and 50%

by 2020 (Armstrong and Wally, 2012). Generally, these recommendations are based on the assumption that the critical mass of women directors is reached when boards of directors have at least 30% women, as supported by many scholars (see Chapter 1). Taken together, these substantive guidelines were applied in this analysis to establish the following qualitative anchors. Although a perfect gender balance on boards of directors should require 50% of both women and men, the accomplishment of 30% of women on boards could represent a virtuous achievement. Therefore, 30% was considered the threshold of full membership for sufficient gender diversity on boards, while 20% and 10% were established as the cross-over point and the threshold for full non-membership respectively. The resulting set was called the set of "EU countries with a higher number of women on boards".

The criteria of calibration are summarized in Table 3.4. The calibration of conventional variables in fuzzy sets and the resulting truth table represent the next steps of the analysis. They are described in the next chapter.

Table 3.4- Criteria for set calibration

	Full Membership	Cross Over Point	Full Non Membership
Women on Boards	30	20	10
Maternity Leave	250	150	50
Paternity Leave	15	9	3
Parental Leave	240	140	40
Forms of Regulation	0.90	0.55	0.20
Childcare Services	33	20	10
Female Part-time Employment	35	20	5
Female Employment	65	45	25
Gender Equality	1	0.5	0

Source: Own elaboration from "Iannotta et al. (2015) Institutional Complementarities and Gender Diversity on Boards: A Configurational Approach. Corporate Governance: An International Review, doi: 10.1111/corg.12140".

CHAPTER SUMMARY

In order to corroborate the theoretical propositions formulated in the previous chapter, this study performs a fuzzy sets/Qualitative Comparative Analysis between the 27 EU countries (*cases*). Through fs/QCA, countries are mapped in terms of configurations of institutional attributes (*causal conditions*). The aim is to explore the existence of particular combinations of country-level attributes that can lead to a comparatively higher number of women on boards across countries. In this way, the alleged claims of conjunctural causation and equifinality are empirically investigated. In detail, this chapter has stressed the importance of adopting fs/QCA as both a research approach and an analytical technique and it has detailed its main steps and procedures. After selecting cases and causal conditions to be involved in the analysis, conventional variables need to be transformed into fuzzy sets (calibration of fuzzy sets). To that end, the chapter has primarily focused on the so-called "direct method" of calibration, which transforms interval-scale variables into the metric of log odds, and then into the degree of membership in the target (fuzzy) set. Moreover, this method requires establishing three important qualitative anchors according to theoretical and substantive knowledge at hand. They are: 1) the threshold for the full membership of countries in the target set (1); 2) the cross-over point where cases are neither in nor out the set; and 3) the threshold for the full non-membership of countries in the target set (0). For the purpose of this study, this chapter has described the criteria that were used in the selection of cases and causal conditions in order to define the research setting. Moreover, it has presented the measures that were chosen to quantitatively express both causal conditions and outcome. Afterwards, it has detailed the criteria that were used for their calibration in fuzzy sets. Generally, the selection of qualitative anchors for designating the membership of cases in a target set was made according to a number of recommendations provided by institutional international bodies. After establishing a significant anchor (for example, for full membership or full non-membership), the remaining qualitative anchors were defined according to the criterion of equal distance intervals. The remaining steps of fs/QCA refer to the construction and analysis of the truth table. A truth table contains all the logically possible *AND* combinations of causal conditions for an outcome, where each row represents a unique configuration. The analysis of the truth table corresponds to the analysis of sufficient conditions for the outcome of interest, while the analysis of necessary conditions requires a separated procedure. Since these steps are more closely related to the analytical moment of fs/QCA, they are developed in the next chapter.

CHAPTER 4   ANALYSIS AND RESULTS

OVERVIEW: After describing the transformation of conventional variables in fuzzy
sets and the construction of the truth table, this chapter presents the results of the
analysis of sufficiency and necessity. The corresponding findings reveal the
existence of a particular configuration of national institutional conditions that is
sufficient to achieve a higher number of women on boards. Conversely, gender
quotas legislation for boards of directors is found to be neither a necessary nor a
sufficient condition for gender diversity on boards. Overall, these results support
the alleged existence of institutional complementarities and *conjunctural*
causation, but not the occurrence of other *equifinal* pathways for the outcome
under investigation.

4.1 Set calibration and Truth Table

This analysis was performed by using the current version of the fs/QCA software
package 2.5 (Ragin *et al.*, 2006), which allows for automatically calculating the
transformation of conventional variables in fuzzy sets. In detail, by taking the
qualitative thresholds established in the previous chapter, calibration was computed
through the direct method of calibration. Table 4.1 shows the results of calibration and it
reports the degree of membership of EU countries in each target set, while Figures from
4.1 to 4.9 report the distribution of the EU countries in the target sets.

The 2^8 possible combinations of causal conditions were represented in the truth table,
where each row corresponds to a specific configuration of national attributes. For each
combination, it was detected the number of EU countries with a membership score
greater than 0.5 in each combination. The relevant combinations of causal conditions
were selected according to the frequency of countries that showed these combinations.
When the total number of cases is relatively small, the frequency threshold should be 1
or 2 (Ragin, 2008b). Accordingly, an acceptable threshold of frequency higher or equal
to 1 was set. Finally, when the membership score of EU countries in a given
configuration was smaller than or equal to the membership score that EU countries had
in the outcome set (i.e., the set of "EU countries with a higher number of women on
boards"), then the value of the outcome in that configuration was set to 1. Conversely, it
was set to 0.

Definitively, the truth table represented in Table 4.2 contains all logically possible
combinations   of   causal   conditions   with   two   truth-values   (1   and   0).

Table 4.1 - Transformation of conventional variables in fuzzy sets

| EU Countries	Set of EU Countries with a higher number of women on boards	Set of EU Countries with high level of maternity leave	Set of EU Countries with high level of paternity leave	Set of EU Countries with high level of parental leave	Set of EU Countries with high level of formal childcare services	Set of EU Countries with high level of gender equality	Set of EU Countries with high level of gender regulation	Set of EU Countries with high level of female part-time employment	Set of EU Countries with high level of female employment
	HighWOB	HighML	HighPL	HighPARL	HighFCHs	HighGE	HighREG	HighFPT	HighFE
AT	0,08	0,24	0,01	1	0,02	0,81	0,39	0,93	0,91
BE	0,11	0,21	0,05	0,77	0,83	0,84	0,98	0,92	0,81
BG	0,07	0,91	0,95	1	0,03	0,81	0,01	0,03	0,83
CY	0,02	0,33	0,01	0,01	0,43	0,74	0,01	0,2	0,88
CZ	0,25	0,8	0,01	1	0	0,74	0,01	0,07	0,79
DE	0,35	0,17	0,01	1	0,18	0,84	0,39	0,97	0,93
DK	0,56	0,33	0,92	0,93	1	0,86	0,39	0,73	0,96
EE	0,03	0,43	0,62	1	0,14	0,77	0,01	0,17	0,93
EL	0,03	0,28	0,03	0,01	0,18	0,74	0,01	0,23	0,72
ES	0,09	0,24	0,95	0,01	0,18	0,8	0,98	0,6	0,87
FI	0,93	0,21	0,99	0,63	0,61	0,89	0,98	0,31	0,94
FR	0,82	0,24	0,92	1	0,67	0,83	0,98	0,6	0,87
HU	0,02	0,63	0,12	1	0,01	0,74	0,01	0,06	0,7
IE	0,03	0,72	0,01	0,01	0,06	0,85	0,01	0,98	0,81
IT	0,06	0,43	0,02	1	0,06	0,77	0,98	0,9	0,53
LT	0,34	0,33	1	0,95	0,01	0,79	0,01	0,12	0,91
LU	0,04	0,24	0,03	1	0,83	0,8	0,39	0,88	0,77
LV	0,92	0,24	0,62	1	0,43	0,83	0,01	0,14	0,93
MT	0,01	0,17	0,02	0,01	0	0,74	0,01	0,77	0,3
NL	0,61	0,24	0,03	0,01	0,02	0,84	0,39	1	0,94
PL	0,08	0,24	0,92	1	0,01	0,77	0,39	0,17	0,75
PT	0,02	0,29	0,62	0,01	0,96	0,79	0,39	0,23	0,92
RO	0,08	0,33	0,12	1	0,01	0,76	0,01	0,17	0,67
SE	0,84	0,17	0,62	1	0,97	0,87	0,39	0,4	0,96
SI	0,4	0,21	1	0,97	0,98	0,81	0,01	0,14	0,88
SK	0,13	0,17	0,01	1	0,01	0,75	0,01	0,06	0,79
UK	0,41	0,72	0,92	0,01	0,01	0,81	0,39	0,98	0,91

Source: Own elaboration from "Iannotta et al. (2015) Institutional Complementarities and Gender Diversity on Boards: A Configurational Approach. Corporate Governance: An International Review, doi: 10.1111/corg.12140".

Figure 4.1 - Distribution of countries in the fuzzy set of "High level of Maternity leave"
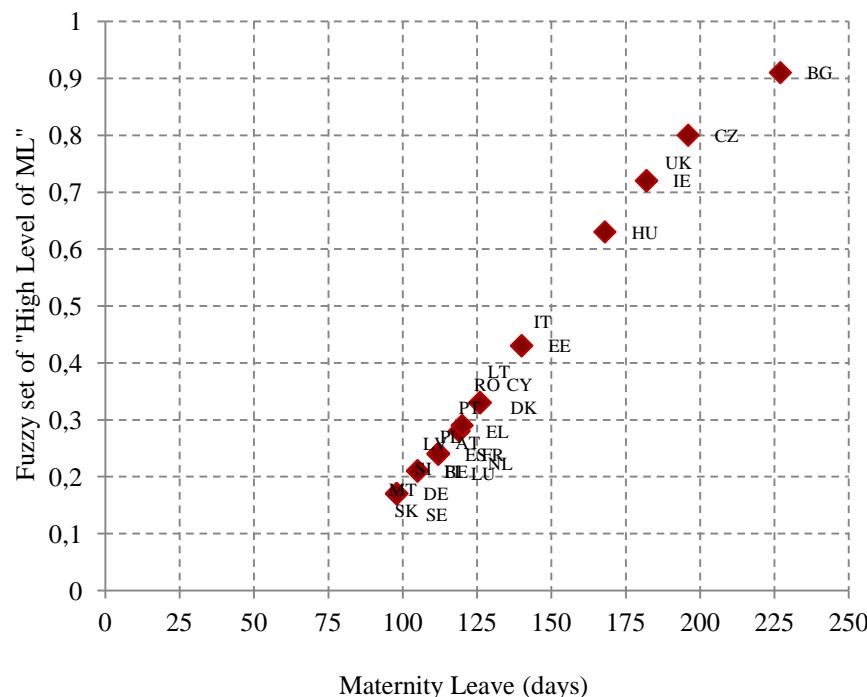
Source: Own elaboration from "Iannotta et al. (2015) Institutional Complementarities and Gender Diversity on Boards: A Configurational Approach. Corporate Governance: An International Review, doi: 10.1111/corg.12140".

Figure 4.2 - Distribution of countries in the fuzzy set of "High level of Paternity leave"
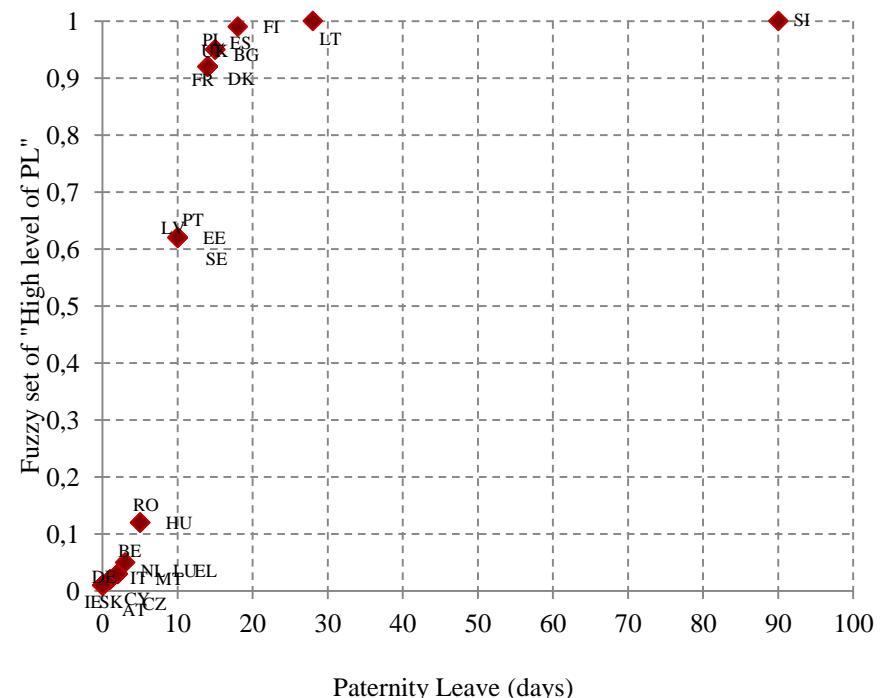
Source: Own elaboration from "Iannotta et al. (2015) Institutional Complementarities and Gender Diversity on Boards: A Configurational Approach. Corporate Governance: An International Review, doi: 10.1111/corg.12140".

Figure 4.3 - Distribution of countries in the fuzzy set of "High level of Parental Leave"
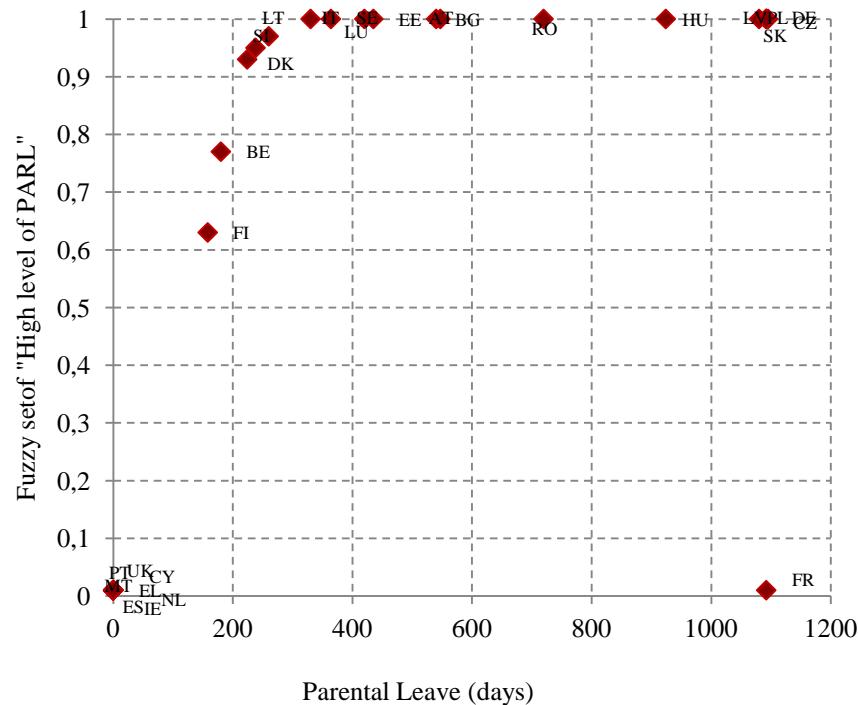
Source: Own elaboration from "Iannotta et al. (2015) Institutional Complementarities and Gender Diversity on Boards: A Configurational Approach. Corporate Governance: An International Review, doi: 10.1111/corg.12140".

Figure 4.4 - Distribution of countries in the fuzzy set of "High level of Formal Childcare Services"
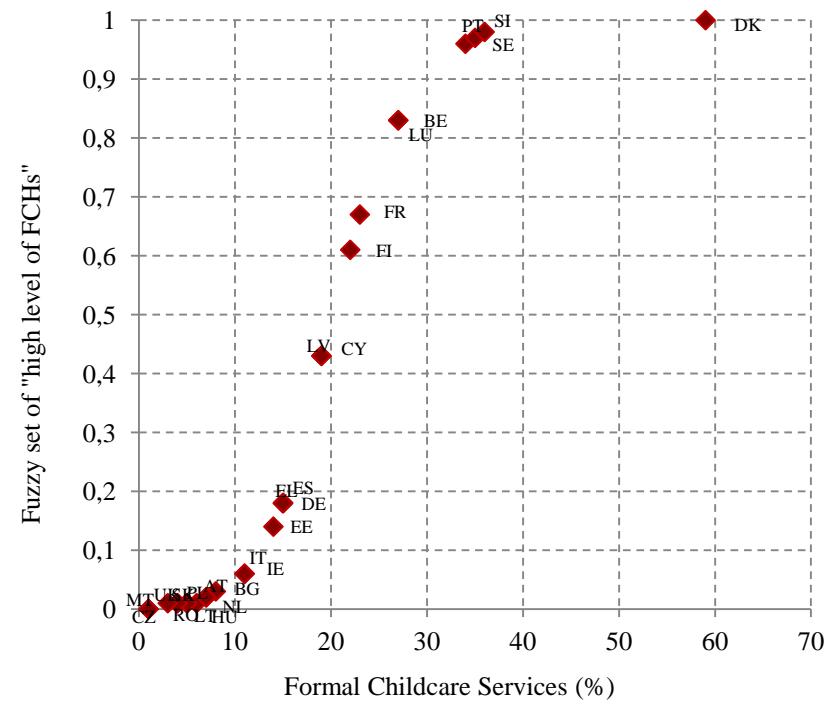
Source: Own elaboration from "Iannotta et al. (2015) Institutional Complementarities and Gender Diversity on Boards: A Configurational Approach. Corporate Governance: An International Review, doi: 10.1111/corg.12140".

Figure 4.5 - Distribution of countries in the fuzzy set of "High level of Gender Equality"
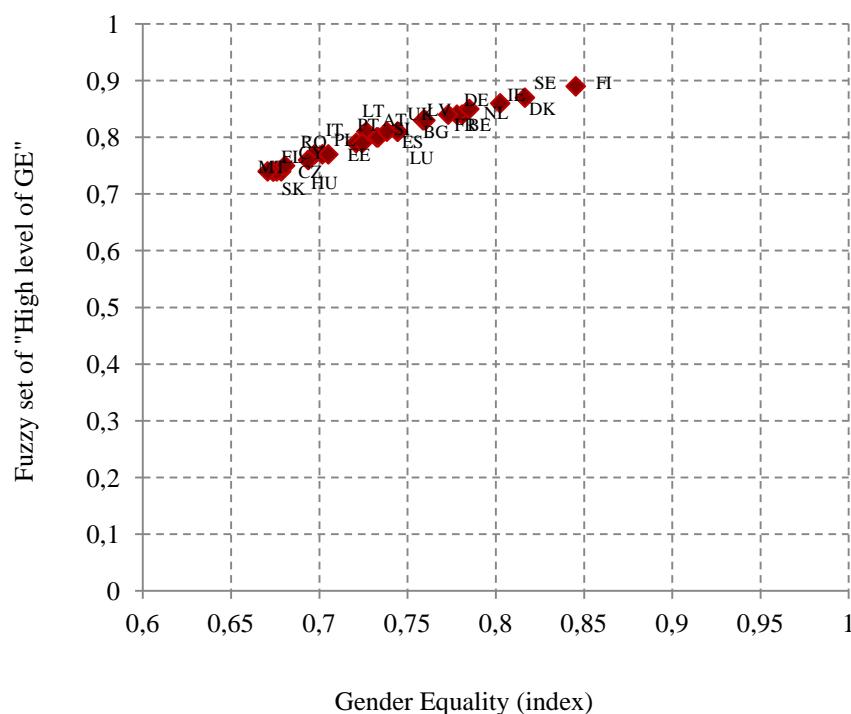
Source: Own elaboration from "Iannotta et al. (2015) Institutional Complementarities and Gender Diversity on Boards: A Configurational Approach. Corporate Governance: An International Review, doi: 10.1111/corg.12140".

Figure 4.6 - Distribution of countries in the fuzzy set of "High level of Regulation"
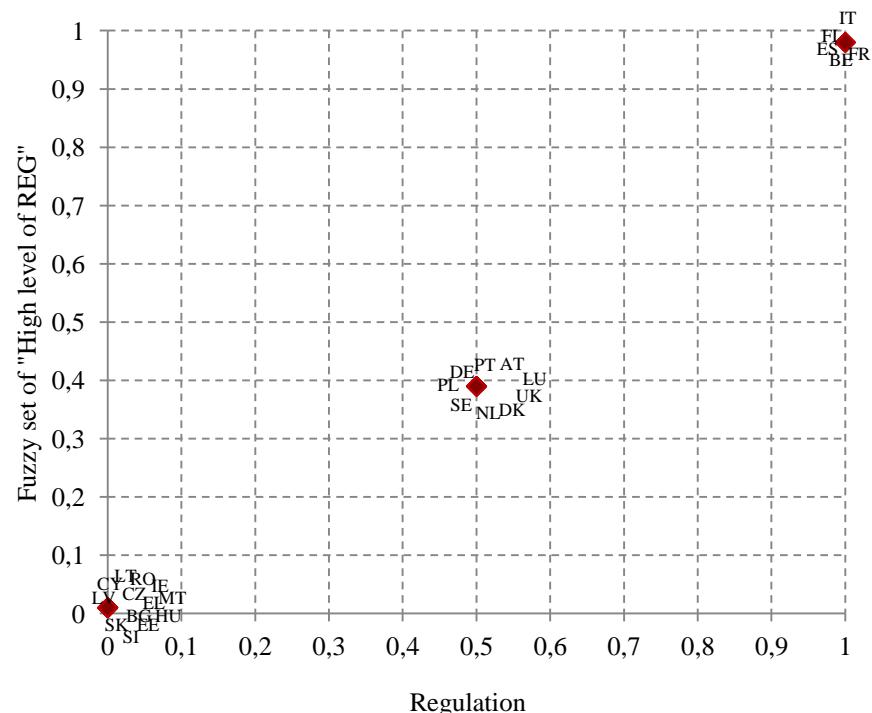
Source: Own elaboration from "Iannotta et al. (2015) Institutional Complementarities and Gender Diversity on Boards: A Configurational Approach. Corporate Governance: An International Review, doi: 10.1111/corg.12140".

Figure 4.7 - Distribution of countries in the fuzzy set of "High level of Female Part Time Employment"
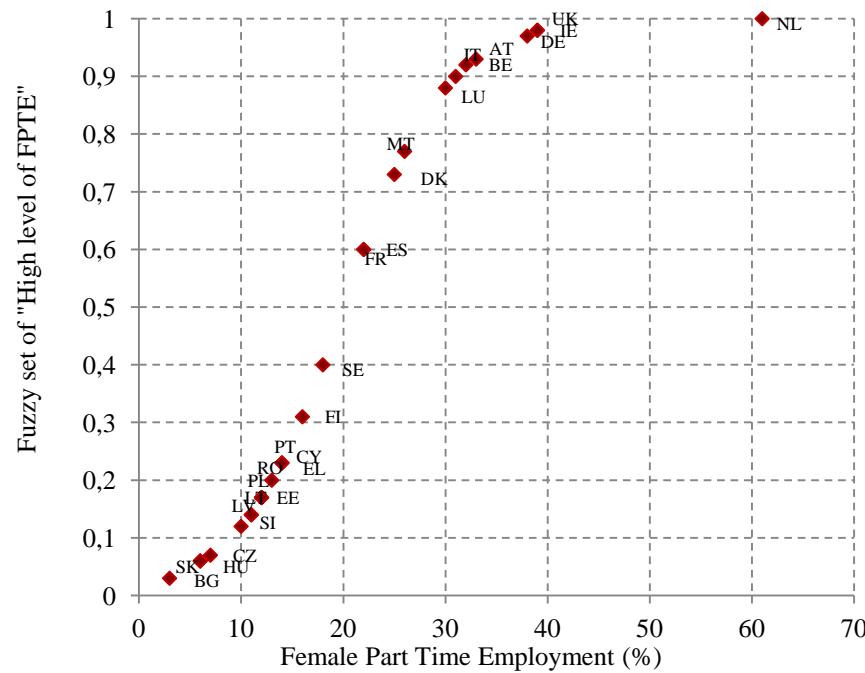
Source: Own elaboration from "Iannotta et al. (2015) Institutional Complementarities and Gender Diversity on Boards: A Configurational Approach. Corporate Governance: An International Review, doi: 10.1111/corg.12140".

Figure 4.8 - Distribution of countries in the fuzzy set for "High level of Female Employment"
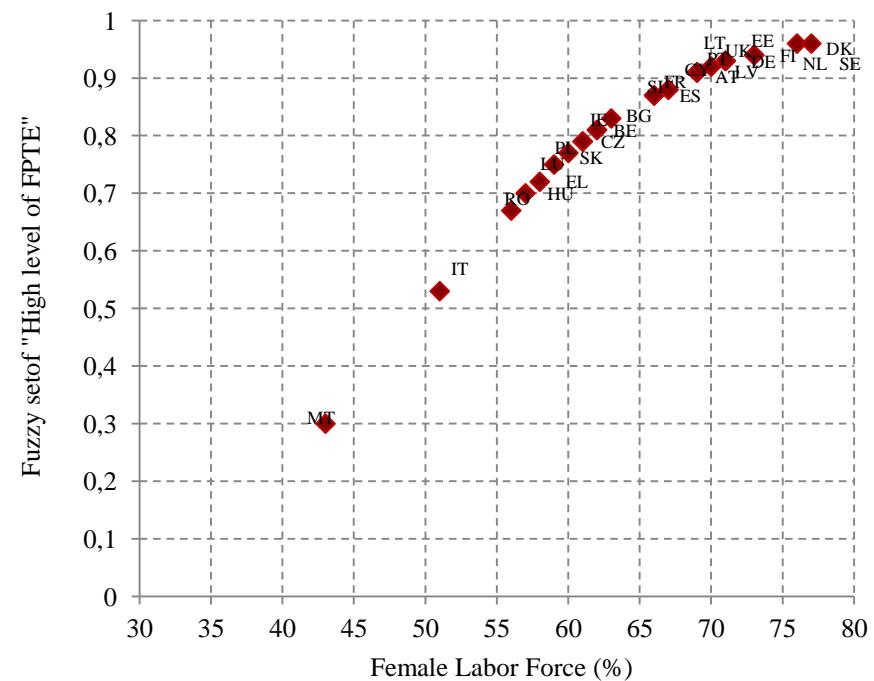
Source: Own elaboration from "Iannotta et al. (2015) Institutional Complementarities and Gender Diversity on Boards: A Configurational Approach. Corporate Governance: An International Review, doi: 10.1111/corg.12140".

Figure 4.9 - Distribution of countries in the fuzzy set for "High number of Women on Board"
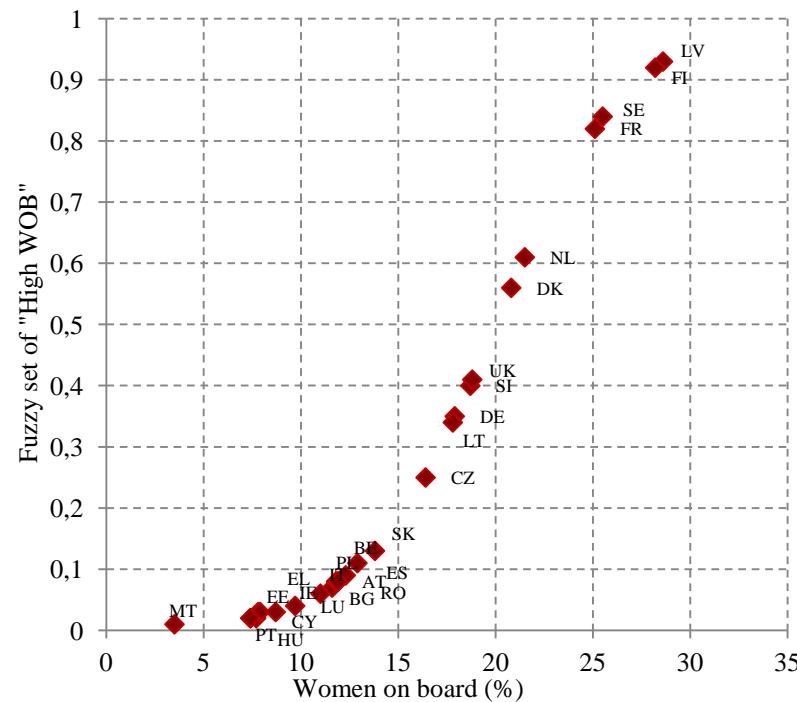
Own elaboration from "Iannotta et al. (2015) Institutional Complementarities and Gender Diversity on Boards: A Configurational Approach. Corporate Governance: An International Review, doi: 10.1111/corg.12140".

Table 4.2 - Truth Table

| High ML	High PL	High PAR	High FCH	High GE	High REG	High FE	High FPTE	Number of EU countries ≥ 0.5	High WOB	Raw Consistency
0	1	1	1	1	1	1	0	1	1	1.00
0	1	1	1	1	1	1	1	1	1	1.00
0	1	1	1	1	0	1	1	1	1	0,91
0	1	1	1	1	0	1	0	2	1	0,8
1	1	0	0	1	0	1	1	1	0	0,74
0	0	1	1	1	0	1	1	1	0	0,61
0	1	0	0	1	1	1	1	1	0	0,61
0	0	1	1	1	1	1	1	1	0	0,52
0	0	1	0	1	1	1	1	1	0	0,5
0	0	1	0	1	0	1	1	2	0	0,49
0	1	1	0	1	0	1	0	4	0	0,48
0	0	0	0	1	0	1	1	1	0	0,47
1	1	1	0	1	0	1	0	1	0	0,44
1	0	1	0	1	0	1	0	2	0	0,4
0	0	1	0	1	0	1	0	2	0	0,39
0	1	0	1	1	0	1	0	1	0	0,3
1	0	0	0	1	0	1	1	1	0	0,28
0	0	0	0	1	0	0	1	1	0	0,2
0	0	0	0	1	0	1	0	2	0	0,1

Source: Own elaboration from "Iannotta et al. (2015) Institutional Complementarities and Gender Diversity on Boards: A Configurational Approach. Corporate Governance: An International Review, doi: 10.1111/corg.12140".

4.2 Analysis of sufficiency

The truth table was analyzed in order to find which causal conditions, or combinations of causal conditions, are sufficient to achieve a higher number of women on boards across countries. Since each row of the truth table in which the outcome shows the value 1 represent a sufficient pathway for the outcome, the total amount of all possible combinations of conditions has to be logically reduced in order to avoid the presence of redundant and irrelevant conditions. This process of logical minimization of configurations was automatically computed through the fs/QCA software, which makes use of the so-called "truth table algorithm" (based on the Quine – McCluskey algorithm).

The first step of the analysis of the truth table was made to test the individual sufficiency of each national condition. The corresponding results are reported in Table 4.3. Overall, it emerges that, taken one at time, national conditions are not sufficient on their own to achieve a higher number of women on boards. Since, the minimum recommended threshold to accept a solution as consistent is 0.75, in this study this threshold has been set at 0.80. The values of consistency for each conditions show that empirical evidence is not considerably consistent with the circumstance of perfect subset relations. Interestingly, according to the criteria that were used for calibrating fuzzy sets (see § 3.4), the condition "high level of regulation" correspond *de facto* to the set of EU countries that have enacted gender quotas for female representation on corporate boards. This condition shows a value of consistency of about 0.50, meaning that about half of cases contradicts the statement of sufficiency. This circumstance does not satisfy in anyway the requirement for establishing individual sufficiency, although the value of coverage (0.58) indicates that they are empirically important conditions, i.e. they cover several EU countries. Nevertheless, gender quotas for boards of directors appear to be not a sufficient condition to achieve a comparatively higher number of women on boards. This state of affairs reflects the existence of the so-called INUS conditions, i.e. Insufficient but Necessary part of a condition which is itself Unnecessary but Sufficient for the result" (Mackie, 1974, p. 62). Essentially, this means that although each national attributes is not sufficient on its own, it can be combined with other causal conditions in order to generate a sufficient conjunction for the outcome of interest.

In order to verify the claims of *conjunctural* causation, the logical minimization of the truth table was performed. Interestingly, no logical reminders were found. Therefore, the results (reported in Table 4.4) correspond to the complex solution, i.e. the solution that is obtained only through the analysis of observed cases without counterfactuals. This solution shows the existence of a unique configuration of national institutional conditions that, taken together, are sufficient to achieve a higher number of

women on boards. They are: high length of paternity leave, not high length of maternity leave, high length of parental leave, high level of childcare services, high level of female employment and high level of gender equality. The value of consistency related to this specific pathway is 0.85 and it corresponds to the overall solution consistency, while the level of coverage corresponds to a value of 0.49. Taken together, these parameters of fit suggest that the detected solution is considerably acceptable. The EU countries that display this unique combination of causal conditions are Slovenia, Denmark, Sweden, Finland and France. Indeed, they show a membership score greater than 0.5 in such configuration.

The graphical representation of these findings is shown in Figure 4.10. More exhaustively, it reports the distribution of EU countries in the detected configuration. Since the notion of sufficiency implies that the conjunction of causal conditions is a subset of the outcome, the membership score of countries in the sufficient configuration need to be smaller than or equal to the membership score that countries have in the set of a "high number of women on boards". In graphical terms, this means that the alleged claims of sufficiency are satisfied when countries are above or on the main diagonal. In line with Schneider and Wagemann (2012), EU countries that are far below the main diagonal are those that strongly contradict the statement of sufficiency.

Table 4.3 - Sufficiency of individual conditions

	Consistency	Raw Coverage
High Maternity Leave	0,39	0,5
~ High Maternity Leave	0,39	0,92
High Paternity Leave	0,46	0,72
~ High Paternity Leave	0,19	0,41
High Formal Childcare Services	0,49	0,57
~ High Formal Childcare Services	0,23	0,57
High Female Labour Force	0,33	1
~ High Female Labour Force	0,39	0,26
High Female Part Time Employment	0,35	0,61
~ High Female Part Time Employment	0,33	0,64
High Gender Equality	0,33	0,98
~ High Gender Equality	0,51	0,38
High Regulation	0,5	0,58
~ High Regulation	0,28	0,7
High Parental Leave	0,32	0,8
~ High Parental leave	0,21	0,25

Source: Own elaboration from "Iannotta et al. (2015) Institutional Complementarities and Gender Diversity on Boards: A Configurational Approach. Corporate Governance: An International Review, doi: 10.1111/corg.12140".

Table 4.4 – Truth Table Analysis

	RAW COVERAGE	UNIQUE COVERAGE	SOLUTION COVERAGE	CONSISTENCY
HighPARL * ~ HighML * HighPL * HighFCHs * HighFE * HighGE	0.49	0.49	0,49	0.85
Frequency cut-off: 1				
Consistency cut-off: 0.80				

Source: Own elaboration from "Iannotta et al. (2015) Institutional Complementarities and Gender Diversity on Boards: A Configurational Approach. Corporate Governance: An International Review, doi: 10.1111/corg.12140".

Figure 4.10- Graphical representation of the solution
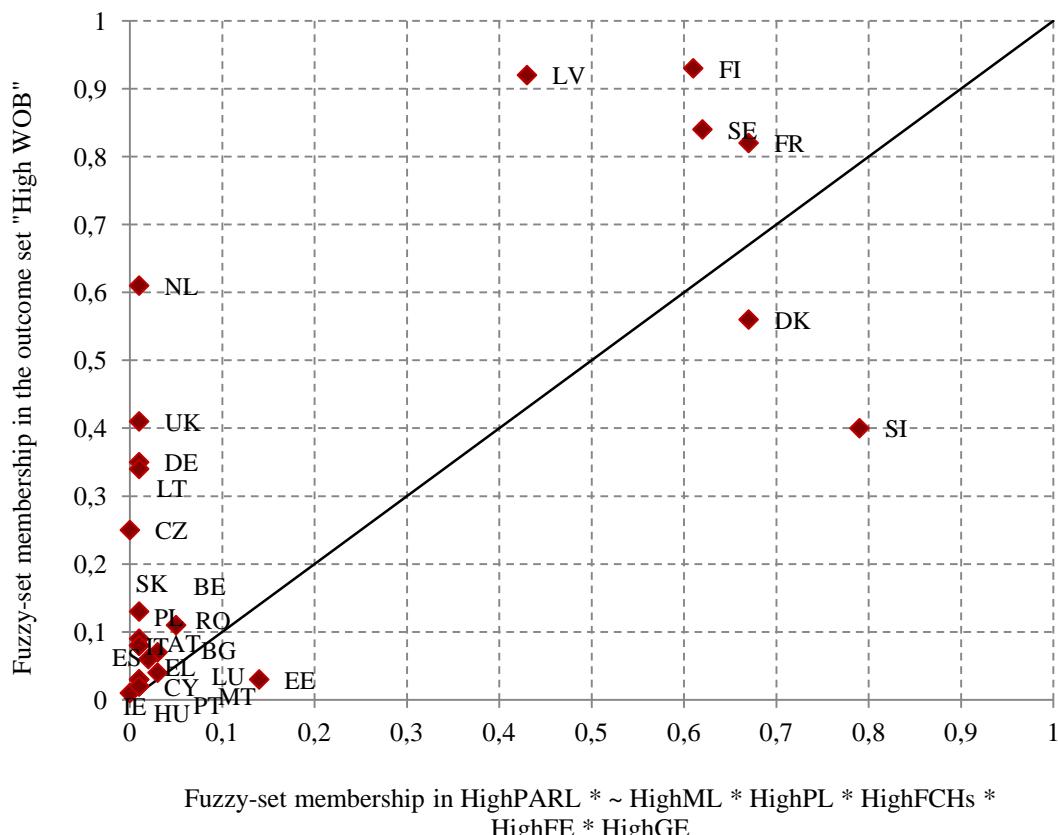
Fuzzy-set membership in HighPARL * ~ HighML * HighPL * HighFCHs * HighFE * HighGE

Source: Own elaboration from "Iannotta et al. (2015) Institutional Complementarities and Gender Diversity on Boards: A Configurational Approach. Corporate Governance: An International Review, doi: 10.1111/corg.12140".

4.3 Analysis of necessity

As described in §3.1.1, the analysis of necessary conditions follows a separate procedure and it requires the analysis of individual conditions, rather than their conjunction. According to the notion of necessity, this analysis has primarily focused on the selection of those countries that show the outcome (i.e., a higher number of women on boards), thus verifying whether they always show a specific condition. Indeed, a necessary condition represents a superset of the outcome, and then it occurs whenever the outcome is present. This also means that fuzzy membership scores of countries in the set of "high number of women on boards" should be less than or equal to their fuzzy membership in the set of the (necessary) causal condition. This subset relation is measured through the assessment of consistency. Generally, a threshold of consistency of at least 0.9 is recommended for statement of necessity (Ragin, 2006). After performing the analysis of necessary conditions, the corresponding results reveal that only three national attributes pass the threshold of 0.9 for consistency. They are high level of female employment, which shows a perfect consistency (1.00); high level of gender equality, with a consistency value of 0.98; and, not high level of maternity leave, with a consistency value of 0.92.

However, it is important to assess the relevance of the detected necessary conditions in term of set dimension and constancy. In order to avoid the first form of trivialness, the values of coverage were taken into account to establish whether the outcome set was much smaller than the condition set. All necessary conditions show low values of coverage, with the exception of the condition "not high maternity leave" that display a relatively higher coverage (0.39). Since the greater is the value of coverage, the greater is the relevance of necessary conditions, then "not high maternity leave" is the only condition that might be considered as a necessary condition for a higher number of women on boards. With regard to the second form of trivialness, both this "survived" necessary condition and the remaining ones were checked for their constancy by applying the formula 3.1.10 (Schneider and Wagemann, 2012). The results show very low values of relevance (from 0.20 to 0.27), due to the circumstance that these conditions are rather a constant across the 27 EU countries. Definitively they cannot be considered as necessary conditions for a higher number of women on boards. In other words, this means that the outcome might occur although in absence of these conditions.

Overall, these findings are reported in Table 4.5, while Figures from 4.11 to 4.13 display the XY plots related to the distribution of the 27 EU countries for the three necessary, although not relevant, conditions.

Table 4.5 - Analysis of necessary conditions

CONDITIONS		CONSISTENCY	COVERAGE	RELEVANCE
High Maternity Leave	HighML	0,50	0,39	
Not High Maternity Leave	~HighML	0,92	0,39	*0,20*
High Paternity Leave	HighPL	0,72	0,46	
Not High Paternity Leave	~HighPL	0,41	0,20	
High Formal Childcare Services	HighFCHs	0,57	0,49	
Not High Formal Childcare Services	~HighFCH	0,57	0,23	
High Female Employment	HighFE	1,00	0,33	*0,24*
Not High Female Employment	~HighFE	0,26	0,39	
High Female Part Time Employment	HighFPTE	0,61	0,35	
Not High Female Part Time Employment	~HighFPTE	0,64	0,33	
High Gender Equality	HighGE	0,98	0,33	*0,27*
Not High Gender Equality	~HighGE	0,38	0,51	
High Regulation	HighREG	0,58	0,50	
Not High Regulation	~HighREG	0,71	0,28	
High Parental Leave	HighPARL	0,80	0,32	
Not High Parental leave	~HighPARL	0,25	0,21	

Source: Own elaboration from "Iannotta et al. (2015) Institutional Complementarities and Gender Diversity on Boards: A Configurational Approach. Corporate Governance: An International Review, doi: 10.1111/corg.12140".

Figure 4.11 - XY Plot - Distribution of EU countries for necessary condition "High Gender Equality"
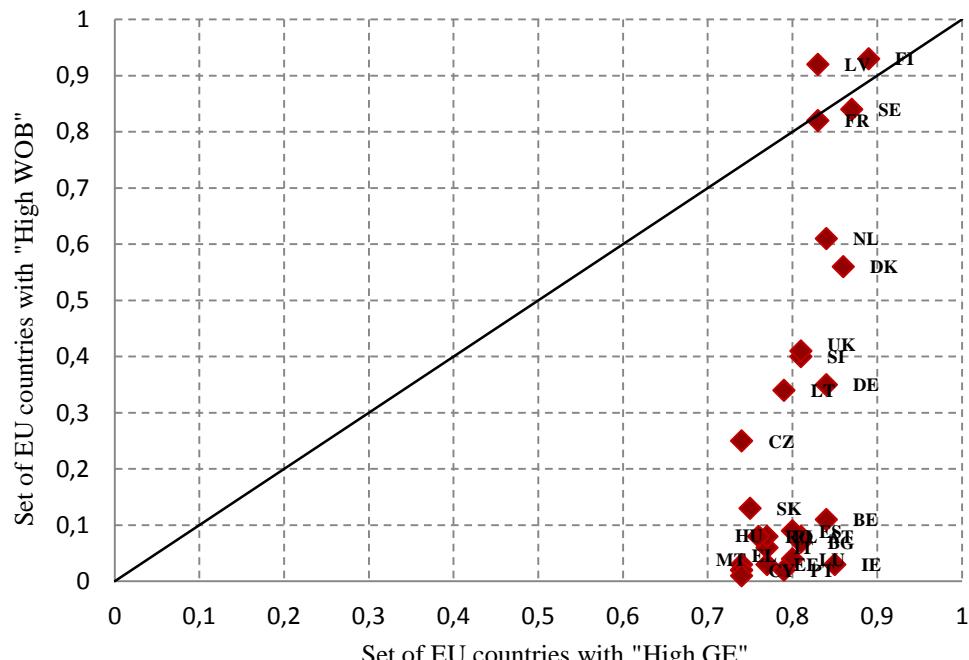
Source: Own elaboration from "Iannotta et al. (2015) Institutional Complementarities and Gender Diversity on Boards: A Configurational Approach. Corporate Governance: An International Review, doi: 10.1111/corg.12140".

Figure 4.12 - XY Plot - Distribution of countries for necessary condition "Not High Maternity Leave"
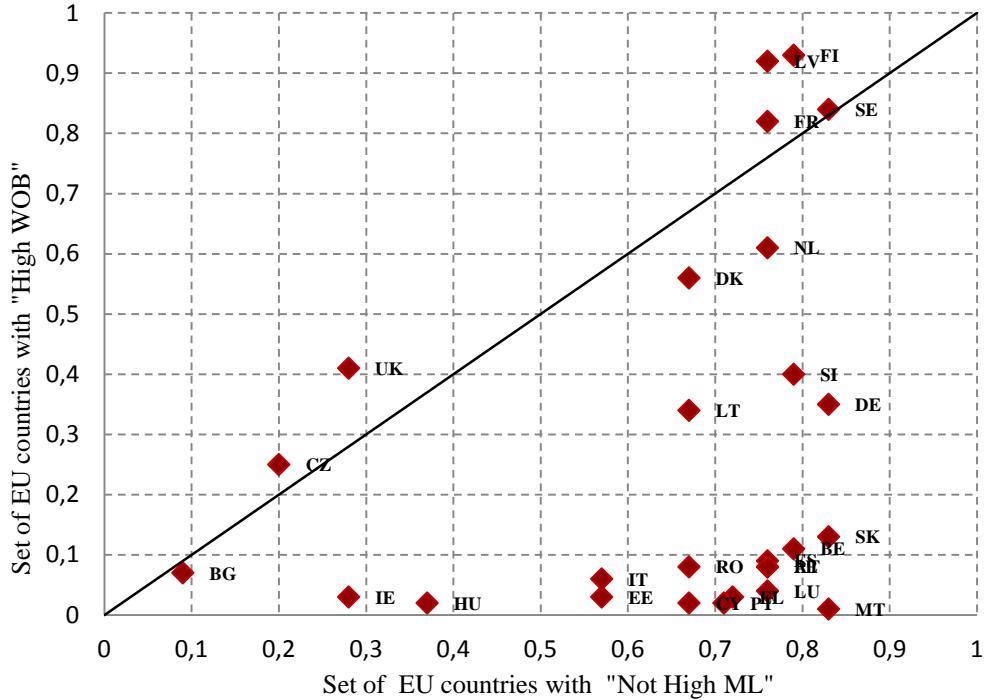
Source: Own elaboration from "Iannotta et al. (2015) Institutional Complementarities and Gender Diversity on Boards: A Configurational Approach. Corporate Governance: An International Review, doi: 10.1111/corg.12140".

Figure 4.13 - XY Plot - Distribution of countries for necessary condition "High Female Employment"
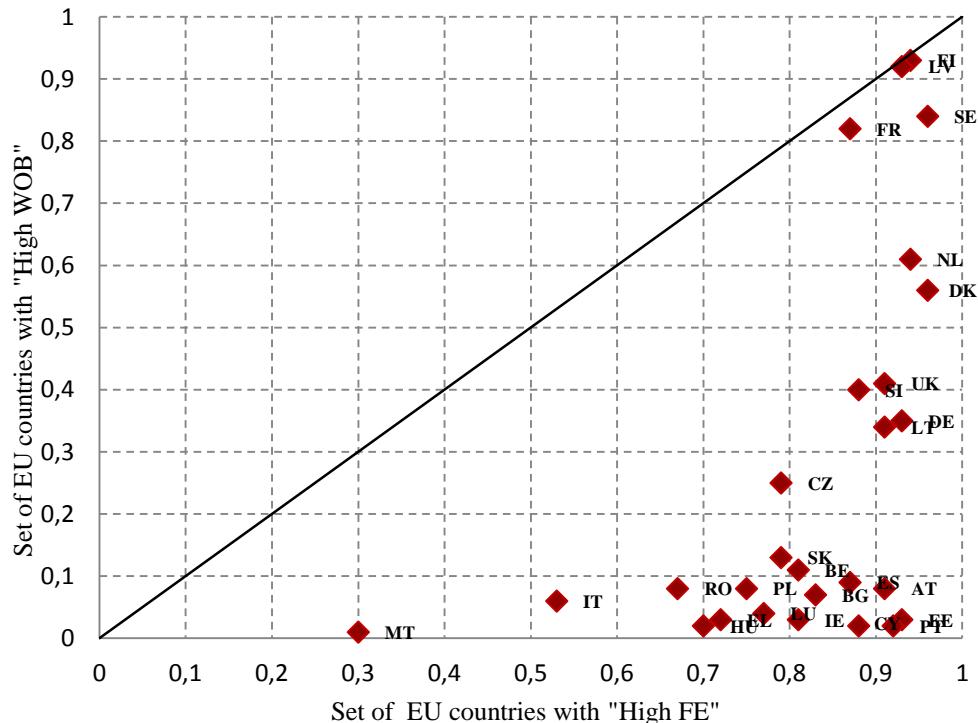
Source: Own elaboration from "Iannotta et al. (2015) Institutional Complementarities and Gender Diversity on Boards: A Configurational Approach. Corporate Governance: An International Review, doi: 10.1111/corg.12140".

CHAPTER SUMMARY

This chapter has presented the analysis of necessity and sufficiency of country-level institutional attributes for a higher number of women on boards. Taken together, these steps constitute the analytical moment of fs/QCA that aims to explore the empirical existence of particular configurations of causal conditions for the outcome under investigation. The analysis of necessary conditions has been separated from the analysis of sufficient conditions, also known as the "truth table analysis". On the one hand, the results of the analysis of necessity have showed that three main national attributes correspond to the notion of necessary conditions, namely not high length of maternity leave, high level of gender equality, and high level of female employment. Unfortunately, when they were checked for relevance, they did not appear to be empirically significant, because they were a constant across EU countries. On the other hand, the analysis of (individual) sufficiency has revealed that, taken one at time, the elected institutional attributes are not sufficient on their own to achieve a higher number of women on boards. However, they might be sufficient if combined one another. In order to verify the existence of *conjunctural* causation and *equifinality*, the logical minimization of the truth table was performed. The corresponding results have showed the existence of a unique configuration of national institutional conditions that is sufficient to achieve a higher number of women on boards. In detail, it has emerged that the conjunction of high length of paternity leave, not high length of maternity leave, high length of parental leave, high level of childcare services, high level of female employment *AND* high level of gender equality is sufficient for a comparatively higher number of women on boards across EU countries. However, these findings have showed another point of interest: gender quotas legislation for boards of directors has been found to be neither a necessary nor a sufficient condition for gender diversity on boards. Overall, while these results support the alleged existence of institutional complementarities and *conjunctural* causation, they do not reveal the occurrence of other *equifinal* pathways for the outcome under investigation. By stressing the importance of the dialogue between ideas and evidence, the next chapter discusses these findings.

CHAPTER 5   DISCUSSION AND CONCLUSION

OVERVIEW: The aim of this study was to assess the existence of institutional complementarities between certain national attributes and their synergistic effects on female representation on boards. The core assumption was that the more ungendered are the welfare, labour and cultural institutions, the higher is the number of women on boards. Moreover, by comparing the 27 EU countries in a configurational perspective, it aimed to understand whether and how certain country-level conditions were causally and jointly related to a major presence of women on boards of directors and to evaluate the necessary and/or sufficient function of gender quotas for boards of directors. The corresponding findings have uncovered the existence of a unique configuration of institutional attributes that can lead to a higher number of women on boards, where gender quotas for corporate boards are neither a necessary nor a sufficient condition on its own to achieve a higher number of women on boards. By discussing such evidence, this chapter presents the main contributions and implications of the research for both theory and practice. Finally, it recognizes the existence of some limitations, which nevertheless pave the way for further challenges in future research.

5.1 The importance of national configuration for gender diversity on boards

In line with Schneider and Wagemann (2012), set-theoretic methods, and QCA in particular, are inductive in their nature and they allow for the empirical evaluation of theory-driven assumptions. In detail, the alleged sufficient paths that were derived from theory can be compared with the solution terms of sufficient conditions that were detected by the empirical analysis, thus generating some meaningful intersections. According to the aforementioned authors, when theoretical paths and empirical paths overlap, a theory can be confirmed. However, "hypothesis are not rejected or supported *tout court*. Rather, the evaluation of theory-guided hunches sheds light on which parts of existing theories are supported by empirical findings; in which direction should be expanded; and which part need to be dropped" (Schneider and Wagemann, 2012, p. 295). By acknowledging the importance of the dialogue between ideas and evidence, this section deepens and discusses several aspects that have emerged from the comparison between theoretical assumptions and empirical findings. As noted by Schneider and Wagemann (2012), after the analytic moment of QCA, dialoguing with cases under investigation is important to facilitate the interpretation of the results.

Indeed, interpreting findings is a meaningful moment to reunite theory with the evidence discovered by observed data.

On the one hand, the alleged existence of a multiple conjunctural causation that affects female representation on boards of directors was expressed in Chapter 2 as follows:

*High Length of Paternity Leave * ~ High Length of Maternity Leave * High Length of Parental Leave * High Level of Childcare Services * High Level of Female Employment * ~ High Level of Female Part-Time Job * High Level of Gender Equality + Gender Quotas for Board of Directors → Higher Number of Women on Boards.*

In practical terms, this is a set-theoretic representation of theoretical propositions, and it suggests that there are two alternative (or *equifinal*) pathways that can equally lead to achieve a higher number of women on boards: 1) a conjunction of greatly un-gendered national conditions in three main institutional domains (welfare states, labour markets and national cultures); *OR*, 2) the enactment of gender quotas for boards of directors. Moreover, this notation highlights the not necessary function of gender quotas for female representation on boards of directors. In other words, gender quotas can be a sufficient condition by itself to achieve a higher number of women on boards, but they are not necessary to do so. This statements derives from the circumstance that the outcome can be reached with a great gender neutrality in welfare, labour and cultural institutions, without necessarily the enactment of gender quotas.

On the other hand, the empirical results generated by the implementation of the qualitative comparative analysis correspond to the following solution term (presented in Chapter 4):

*High Length of Paternity Leave * ~ High Length of Maternity Leave * High Length of Parental Leave * High Level of Childcare Services * High Level of Female Employment * High Level of Gender Equality → Higher Number of Women on Boards*

Overall, the overlap of these two solutions provides support for a number of the theoretical propositions that drive this work. The empirical solution of sufficient conditions shows the existence of a unique configuration of country-level causal conditions that can lead to a comparatively higher number of women on boards across countries. This evidence has a threefold implication.

Firstly, it recognizes that, taken jointly, certain country-level conditions that mirror the gendered nature of welfare, labour and cultural institutions are causally related to a higher number of women on boards. More exhaustively, the analysis of individual sufficiency has revealed that, taken one at time, the elected national attributes are not

sufficient on their own for the outcome, while they result sufficient if combined one another. This evidence implicitly supports the existence of complementarities between such institutional attributes. Indeed, in line with Höpner (2005a), institutional complementarities imply that the presence, and then the functional performance, of a particular institutional arrangement depends on the presence or absence of other institutional arrangements. On this wake, by exerting a joint influence, the conjunction of two or more complementary institutions enhances a given national outcome (Deeg, 2007). With regard to the present analysis, complementarities are detected from the evidence that country-level conditions are not singly sufficient, but they combine and complement each other to create a sufficient conjunction of institutional attributes that can lead to higher national performance in terms of women on boards of directors. Considering that the causal conditions involved in the analysis were selected according to their relative significance in unravelling the gendered nature of institutions, these findings provide wide support to the core assumption of this work (Proposition 1). In other words, they confirm that the more un-gendered are the welfare, labour and cultural institutions of a country, the greater will be the number of women that can reach board positions in that country. The EU countries that display this unique combination of institutional conditions that appear more "gender neutral" are Slovenia, Denmark, Sweden, Finland and France. Not surprisingly, these countries show a national culture where gender equality is embedded within institutions and they primarily correspond to Nordic European and Eastern culture-oriented countries. This evidence comes to converge with the results of Grosvold and Brammer (2011), who find that, typically, countries with a Nordic-oriented and Eastern-oriented cultural system are significantly related to a higher number of women on boards. Moreover, most of these countries show a Scandinavian-originated institutional pattern (Sweden, Finland, Denmark), with the only exception of France and Slovenia. At the same time, Denmark represents an interesting "deviant case" among the other Nordic countries. In graphical terms (see Figure 4.10), this circumstance reflects the different position taken by countries in relation to the main diagonal. Finland, Sweden, France, and Denmark show a membership score greater than 0.5 in both the set of a "higher number of women on boards" and the sufficient conjunction. In line with Schneider and Wagemann (2012, p. 308), their position in the upper right area of the graph leads to define them as "typical cases". Nevertheless, Finland, Sweden and France are situated above the main diagonal, while Denmark stays below the main diagonal. This means that Finland, Sweden and France satisfy high value of consistency and coverage in both the sufficient configuration and the outcome, while Denmark seems to contradict the statement of sufficiency with lower level of consistency and coverage. With regard to the case of Slovenia, this country represents a "deviant cases for consistency" as it displays the sufficient configuration but rather low value of membership in the outcome set. In other

words, despite the presence of gender neutral institutions, Slovenia does not achieve a good performance in terms of female representation on boards. With regard to the welfare state of countries, empirical evidence reveals that France, Sweden, Finland, Denmark and Slovenia show the highest provision of childcare services and the highest paternity and parental leave across the 27 EU countries. Interestingly, the good performance of France in terms of female representation on boards leads to partially contradict the evidence of previous research, which has reported that the generosity of welfare institutions in countries with French and Germanic legal heritage is significantly related to lower level of women on boards (Grosvold and Brammer, 2011). Such a result is very consistent with the theoretical assumptions of this study and it underlines an important implication: beyond generosity, also gender neutrality of welfare institutions needs to be taken into account when assessing the influence of welfare states on female representation on boards. As noted by a recent *The Economist*'s article, "the gains from maternity leave would be multiplied if countries extended it to apply fathers, too" (The Economist, 2015a, p. 12). Indeed, the aforementioned article reports that generous provision of maternity leave harms women, rather than helping them, because time off work for childcare leads women to lose skills, experience and promotions. In a similar vein, it enhances gender discrimination from employers. It is not by chance that the EU countries that show a comparatively higher number of women on boards show the same gender-neutral approach to parental leave provision. For instance, Sweden grants a bonus to mothers and fathers who share parental leave more equally, while France grants bonus to parents that split childcare between them (The Economist, 2015b, p. 53). Looking at the gendered nature of labour markets, these countries generally show high levels of female employment. To that regard, the analysis of necessary conditions has revealed that, although it represents a constant across countries, the condition "high level of female employment" holds a perfect consistency (1.00). This means that all EU countries that show a higher number of women on boards also show high level of female participation in the labour market. In graphical terms, this perfect consistency is represented by the presence of all countries below or on the main diagonal (see Figure 4.13), meaning that all cases have a membership score in the set of the condition that is greater than or equal to their membership score in the set of the outcome. Indeed, necessity implies that the condition is a superset of the outcome.

The second implication regards the lack of the condition "not high level of female part-time employment" in the unique configuration detected through the comparison of cases. In this way, the discovered configuration partially differs from that derived from the theoretical development. Essentially, this condition is not consistent with the other conditions for achieving a higher number of women on boards. This lack of consistency is related to the presence of countries (i.e., Denmark and France) that show levels of female involvement in part-time jobs that are greater than level of female part-time

employment in the others. This logical contradiction has led to remove this condition from the unique configuration, albeit it is widely recognized that high levels of part time employment reflect a disproportional involvement of women in childcare and housework. Clearly, such evidence may disguise the intentional choice of women of taking part-time job, irrespective of childcare responsibilities, but the lack of more exhaustive evidence does not allow for making causal inference about this condition. However, with the only exception of this condition, the unique configuration resulting from the empirical analysis almost exactly overlaps with the "ideal" conjunction of causal conditions that was formulated in Proposition 1. Since this configuration reflects theory-based assumptions, relating to the causal relations between complementary institutions, it can be conceived as an (almost) "ideal type" of national model for gender diversity on boards. To that effect, the farther is a country from this "superior" national configuration, the worse its performance in terms of women on corporate boards is likely to be. The underlying causal mechanisms imply that the presence of complementary institutions, which mutually reinforce their similar structures in an un-gendered perspective, allows for a more egalitarian distribution of power and opportunities between women and men in a given social system. Taken together, these findings support that the more the gender equality is embedded in welfare, labour and cultural institutions, the greater the number of women that hold board positions will be.

Finally, the third implication refers to the role of gender quotas for corporate boards in the existing configurations. The corresponding remarks are discussed in detail in the next paragraph.

5.2 The role of gender quotas for gender diversity on boards

The empirical occurrence of a unique configuration of country-level causal conditions implicitly leads to contradict the alleged individual sufficiency of gender quotas for a higher number of women on boards (Proposition 2). In other words, gender quotas for boards of directors "cannot be considered as equally effective and mutual substitutes of a "national model" in which gender equality is radically embedded in each institutional domain" (Iannotta *et al*., 2015, p. 12). According with the notion of sufficiency, this evidence stems from the presence of EU countries that do not show the outcome (a greater number of women on boards), albeit they present the condition (the enactment of gender quotas for boards of directors). In detail, these countries are Belgium, Spain and Italy, where, reasonably, the implementation of gender quotas at board level has been not combined with a national model where gender equality is embedded in institutions. For instance, Seierstad *et al*. (2015) suggest that Italy cannot be considered a gender-egalitarian society, as shown by its performance in terms of female representation on boards that is rather unsatisfactory, despite gender quotas. On

this wake, the existence of complementary institutions that mutually reinforce their gendered structures can lead to make not sufficient the enactment of gender quotas at board level by itself. In line with Deeg (2007), the introduction of a new regulatory policy (such as gender quotas) into a system of complementary institutions might fail to achieve the intended objective, because the existence of institutional complementarities and their synergistic effects might slow down the change that was expected from the introduction of new regulatory policies (Deeg, 2007). Overall, these findings support the claim that gender quotas cannot be very effective if they reinforce negative attitudes towards women or if they are not complemented or combined with policies that promote women at all levels of their career advancement, and not just at board level (e.g., Adams and Kirchmaier, 2013; Bergstø, 2013). In sum, gender quotas can help to increase directly the number of women on boards from the top, but they can fail to remove barriers and to change cultural attitudes that affect women's careers for board positions from the bottom. Definitively, the alleged existence of two *equifinal* pathways for a greater female representation on corporate boards is not supported by findings. Nevertheless, this is the most notable result for this research, since it provides strong support to the assumption that a more equal division of gender roles within families, labour and cultural institutions can lead to a greater presence of women on boards, more than the single enactment of gender quotas does. However, the lack of alternative configurations prevents to learn more about the effectiveness of gender quotas in combination with other specific national conditions.

Conversely, empirical evidence confirms that gender quotas for corporate boards are not a necessary condition to achieve a higher number of women on boards of directors (Proposition 3). This evidence emerges from the presence of EU countries that show the outcome (a greater number of women on boards), without showing the condition (gender quotas for boards of directors). This means that their national configuration, with the conjunction of complementary and gender-neutral institutions, is sufficient to promote the presence of women in top management positions, without the need to enact gender quotas at board level. In detail, these countries are Slovenia, Denmark and Sweden. Interestingly, although these countries show national configurations where gender equality is embedded in welfare, labour and cultural institutions, they have adopted some forms of regulation for gender diversity on boards. For instance, Denmark and Sweden have adopted soft forms of regulation, such as code of good governance including board gender recommendation, while Finland and France have enacted gender quotas. Slovenia represents the only country that has not enacted any form of regulation. Deepening the differences between the national configurations of these countries can contribute to clarify the reasons behind the adoption and diffusion of gender regulatory policies. Focusing on Sweden, this country displays welfare institutions that are really "women-friendly". For example, maternity and paternity

leave are included in a broader parental leave schema, thus emphasizing the role of both parents in childbirth and childcare responsibilities. It is widely recognized that gender equality is pervasive in Swedish institutions, to the extent that most of literature suggests that Sweden does not need to enact formal legal gender quotas (e.g., Teige and Wamgnerud, 2009). Indeed, the initiatives of the Swedish government have been limited to request that companies guarantee an equal gender distribution on their boards of directors (Swedish Corporate Governance Code, section 4, 2010), by specifying later some rules concerning the work of nomination committees (Swedish Code revised on May 2014, with effect from January 2015). On the contrary, despite Finland presents a similar long tradition of gender equality, in 2005 it has enacted gender quotas. However, their introduction has been greatly debated (Teigen, 2012). In addition, the Finnish Corporate Governance Code (2008), applicable to listed companies, requires that both genders shall be represented on the board. There are no penalties for non-compliance, but a "comply or explain" principle is applied. In a similar vein, although the national configuration of France appears to be prone to guarantee a great presence of women on boards, this country has introduced gender quotas legislation at board level with severe penalties for non-compliant companies. With regard to Denmark, the more limited tradition of political gender equality has contributed to the scepticism of this country about gender quotas for corporate boards, to the extent that Denmark has opted for forms of soft regulation (corporate governance recommendations). Finally, Slovenia is the only country that has enacted neither gender quotas, nor specific recommendations in the Slovene Corporate Governance Code, while an administrative regulation recommends electing at least 40% of women on boards of public enterprises.

Taken together, such evidence confirms that the adoption of gender quotas for boards of directors might be attributable more to reasons of diffusion or social legitimization rather than to rational reasons about their actual effectiveness in the existing national configurations. Moreover, these findings verify that the diffusion of gender quotas for corporate boards has followed a regional pattern (Teigen, 2012). To that regard, Kogut and Ragin (2006, p. 47) assert that "diffusion depends upon existing configurations. This means that if northern European countries share a thousand years of institutional and ideational diffusion, they are more likely to adopt institutions from each other than from other regions because the institutional compliance is more likely". Without doubt, since Norway enacted gender quotas on boards, "a snowball started rolling" (Huse and Seierstad, 2014, p. 38) and gender quotas legislation has become *de facto* a socially-expected policy to promote the number of women in board positions. Therefore, some countries have started to follow the Norwegian example. However, such isomorphic behaviours have totally neglected the potential ambiguous effects that gender quotas can have on firm and/or board performance (see for example, Ahern and Dittmar, 2012; Matsa and Miller, 2013). Certainly, the European Union has represented one of the most

influential actors in the political debates on the enactment of gender quotas for boards at national level (Seierstad *et al.*, 2015). For instance, the EU pressure has played the most relevant role in the case of Germany, where scepticism and strong political disagreement on gender quotas has always reigned.

5.3 Contributions of the research

5.3.1 Theoretical and methodological implications

Acknowledging the effects that interacting institutions can have on a given outcome is very important for both theoretical research and policy recommendations (Amable, 2000). In line with this observation, this work makes several theoretical contributions to extant literature on gender diversity on boards, as well as it presents notable implications from a practical perspective.

First, it addresses the importance of understanding institutional antecedents of female underrepresentation on boards for the design of public policies that are effective to promote the presence of women on corporate boards. Whilst recognizing the importance of this linkage, previous studies in corporate governance research have lacked to investigate the relationships between national institutional antecedents and the use of public regulatory policies (Seierstad *et al*., 2015), leaving rather separated these two streams of research. To address this gap, this study presents a unique and comprehensive conceptual framework that takes into account the interrelated forces existing between welfare states, labour markets, national cultures and affirmative action policies in shaping women's career and success.

Second, it refines insights from the extant research on gender diversity on corporate boards, by theoretically informing and empirically verifying the existence of complementarities between the three institutional domains that were previously found to mainly affect female representation on boards. In doing so, it develops explicit causal arguments that link women on boards to a bundle of multiple complementary institutions. Whilst studies with complementarities-based approaches have spread in financial (e.g., Amable *et al*., 2005; Campbell, 2011) and corporate governance research (e.g., Aguilera *et al*., 2008; Garcìa-Castro *et al*., 2013; Jackson, 2005; Kang and Moon, 2012; Rediker and Seth, 1995; Weimer and Pape, 1999), they have completely been neglected in previous studies of diversity on corporate boards. For this reason, the present research offers an important contribution to advance knowledge about the interconnections between institutional antecedents of women on boards and their consequences on the evaluation of the actual necessity and sufficiency of gender regulatory policies. More exhaustively, this study contributes to shed light on why, whether, and which institutional conditions determine a multiple conjunctural influence

on female representation on boards. Similar complementarities-based approaches might be useful to address a plurality of phenomena that concern corporate boards of directors. Some examples could concern the composition and the demography of boards of directors, as well as the assessment of the effectiveness of corporate governance practices.

Third, by adopting a multiple theoretical lens and a set-theoretic approach, this work responds to several research inquiries aimed: 1) on the one hand, to acknowledge the interrelationship among several theories for the subject of women on boards (Terjesen *et al.*, 2009); 2) and, on the other hand, to adopt innovative and more qualitative research methods in studies of corporate governance (Zattoni *et al.*, 2013). In doing so, it makes an important methodological contribution to corporate governance literature. Essentially, women on boards are re-framed as the outcome of multiple causal relations between complementary institutions and they are analyzed in terms of set-relations. Through the implementation of fs/QCA, this work contributes to empirically explore the alleged claims of *conjunctural causation* and *equifinality*. In detail, fs/QCA has been a valuable methodological tool in order to: 1) verify the empirical existence of the theoretically derived "ideal type" of national model for supporting the representation of women on boards; and 2) to assess the actual necessity and sufficiency of gender quotas for boards of directors in the existing national configurations. At the same time, considering that theory is pervasive in QCA, this research approach has led to the development of robust explanations about the causal mechanisms that link country-level causal conditions to women on boards. Finally, adopting fs/QCA as analytical technique has allowed for the logical reduction of the emerging causal complexity. Indeed, taking a configurational perspective often means facing unspecified and unknown relationships among a number of elements in reference to a given outcome. However, through fs/QCA, the number of comparisons between national configurations has been maximized and then logically reduced in a simpler, as well as unique causal statement.

To conclude, this study represents the first attempt to delve into this complexity and it contributes to unpack it by taking gender unbalance on corporate boards as the result of the presence of gender unbalance in many other complementary national institutions. According to Deeg (2007), acknowledging the existence of institutional complementarities and their synergistic effects on a given outcome offers important theoretical implications. For instance, when institutional complementarities occur, then changes in one institution should determine changes also in other complementary institutions (Deeg, 2007). By supporting the presence of institutional complementarities between welfare states, labour markets and national cultures, this research paves the way for further studies that deepen the dynamics of institutional change to foster gender diversity on boards. Moreover, studying dynamics implies to know if a sort of hierarchy between institutions exists, because the more the change occurs in dominant institutions,

the stronger will be its impact on the national outcome at hand (Deeg, 2007). Therefore, further research could address the direction of institutional change by starting from the three main institutional domains that have been found to be complementary in the present study. Finally, future works could deal with the role of actors in changing complementary sets of institutions. To that regard, Deeg (2007, p. 622) asserts that "if central coordination of actors engaged in changing a complementary set of institutions is absent, change in one or more of the institutions will weaken complementarity of the system as a whole". This means that a deepened investigation on the role of state actors and their decision-making process for changing welfare, labour and cultural institutions is still needed.

5.3.2 Policy implications

From a practical point of view, this research presents notable implications for both managers and policy makers. As suggested by Fiss (2007), causal complexity is the most common form of causality facing a decision maker. For this reason, it is important to be most aware of the causes underlying the phenomenon at hand for making a good decision. By dealing with this complexity, the present research offers valuable insights to better inform public policies aimed to promote gender diversity on boards.

First, through a deepened review of the literature, it presents a detailed analysis about causes and antecedents of the underrepresentation of women on boards. This analysis contributes to further political insights into institutional solutions for increasing the number of women in board positions. Second, by supporting the presence of institutional complementarities between welfare, labour and cultural institutions, it contributes to a more rational design of public policies for gender diversity on boards. Indeed, the central tenet of this work is that gender relations shape welfare, labour and cultural institutional domains because gender itself is an institution embedded in other institutions (Martin, 2004; Terjesen *et al.*, 2009). The representation of women on boards evokes a problem of access to opportunities and distribution of power in societies, and therefore women on boards cannot be separated from the role of women in family, labour, welfare and cultural institutions. This means that a more effective mix of policies to promote gender diversity on boards may go beyond the enactment of gender quotas at board level, and it may require initiatives that deconstruct the presence of gender in many other institutions. Indeed, while gender quotas can help to a direct increase of women on boards from the top, they can fail to change cultural attitudes that continue to affect women's careers and their rise to board positions from the bottom. Moreover, policy initiatives should take into account that the presence of institutional complementarities contribute to enhance their stability over time. Therefore, in line with Deeg (2007), introducing a new regulatory policy in a set of stable and mutually

reinforcing institutions might fail to achieve the intended objectives. Legislative initiatives should consider that, if gender persists in other institutions, the introduction of gender quotas at board level might be not a sufficient regulatory policy to promote female representation on boards of directors.

Considering that the existence of complementarities between welfare, labour and cultural institutions determine synergistic effects on female representation on boards, another important implication for policy makers is that, certainly, it may be more effective to implement gender policies in all these institutional spheres, rather than just at board level. However, it is essential to evaluate the costs that such policies may have for nations. It is clear that gender quotas are a near zero-cost policy for nations (Brogi, 2013) compared to the more expensive policies for welfare states and labour markets, but, to that regard, two important aspects need to be underlined. On the one hand, major costs for the introduction of welfare provisions or labour policies may be compensated from their long-term effectiveness in promoting gender equality in every level of social and economic institutions. Some examples of such policies can include: 1) more length-extended paternity leave or parental leave, in order to promote the importance of both mothers and fathers in childcare; 2) a major provision of childcare services to promote female employment; or 3) labour policies and incentives aimed to ensure an adequate participation of women in labour markets. The relevance of these policies has been widely recognized by a recent article published on *The Economist* (May, 2015), where it is asserted: "State meddling in what has historically been regarded as a natural division of labour may irk some. But traditional maternity leave, which channels men into breadwinning and women into child-rearing, is hardly neutral. And shared parenting stands to improve women's careers, children's development and perhaps even dads' life satisfaction" (The Economist, 2015b, p. 54). In sum, a more egalitarian share of childcare and housework labour between women and men provides benefits to the overall society. On the other hand, the absence of costs that gender quotas for boards have for nations does not imply a correspondent absence of costs for companies that are covered by gender quotas legislation. On the contrary, a number of scholars contend that the introduction of board-level gender quotas can have effects on firm performance (e.g., Ahern and Dittmar, 2012; Matsa and Miller, 2013). Such considerations should not be neglected in policy agendas.

Overall, evidence emerged from this research suggests that the adoption of gender quotas across countries appears to be related more to reasons of regional diffusion and social legitimization than to rational and efficiency reasons. However, by assessing the actual necessity and sufficiency of gender quotas in the existing national configurations, this work contributes to stress the importance of more rational driven initiatives for gender diversity on boards. Finally, it contributes to better inform policy about which mix of public policies may be more appropriate to achieve a higher number of women

on boards and, exactly, in which institutional domains these policies should be endorsed.

5.3.3 Managerial implications

The evidence that regulatory policies at board level are neither a necessary nor a sufficient condition for a higher number of women on boards suggests that policy alone cannot solve the challenge of female underrepresentation on boards of directors. The role of adaptations by individual actors in changing a complementary set of institution is a key issue (Deeg, 2007). Companies and their manager have several options of interventions. For instance, beyond voluntary recommendations to encourage gender diversity on their boards, companies could take also voluntary initiatives aimed to facilitate work-life balance and increase gender equality at every level of firm. Generally, when speaking about gender policies, they are often associated with the implementation of initiatives for female workers. However, this is not the only pathway. An important insight of this research is that the less the gender perspective is embedded within institutions, the greater will be the number of women on boards. In other words, this means that companies should address the need for gender policies that involve both men and women and that aim to reduce the distance between their roles in family and work relations. Some example could be a voluntary provision of additional paternity leave for male workers; the deconstruction of (especially cultural) obstacles to male part-time employment; a wide provision of childcare services, nurseries, and timesaving services, and so forth. Overall, in addition to state actors, companies have a prominent role in removing the most recurrent barriers that limit women in their career advancements and in promoting the presence of women in top management positions. Through their initiatives, they may contribute to deconstruct the presence of gendered practices especially in labour and cultural institutions.

5.4 Limitation and Future Research

This study presents some limitations, which however pave the way to further challenges for future research.

A first limitation concerns the research methodology. In detail, fs/QCA is often criticized because of the subjectivism of researcher's choices. In order to limit subjectivism, the criteria for the selection of cases, causal conditions and calibration were described in a very transparent and meticulous manner. Moreover, they were chosen by making primary reference to external sources of knowledge and information, which represent the recommended procedure (e.g., extant research, institutional sources, and so forth). In addition, the pervasive role of theory on QCA implicitly leads researchers to provide a theoretical justification of their choices, by explaining why,

how and which particular conditions are causally related to the outcome of interest. In this way, it guarantees the development of robust explanations about the causal mechanisms that link country-level causal conditions to women on boards. Finally, an important property of QCA is that it enables to identify possible logical contradictions, thus allowing to control, albeit not avoid, the problem of omitted variables that can make spurious the inferred causality (for example, the case of unobserved sources of variation, such as cultural dispositions) (Kogut and Ragin, 2006).

A second limitation refers to the limited size of the sample. For this reason, additional statistical tests have been not provided. Future works could expand the number of countries to be involved in the analysis and include both European and non-European countries. The results of this enlarged comparison may be particularly interesting to provide further insights concerning the mechanisms of adoption and diffusion of gender regulatory policies for boards of directors. However, for the sake of completeness, it is important to understand that "in contrast to standard econometric methods, such as regression analysis, the nonparametric, fuzzy set methods (...) make sample less of an issue", because fuzzy set QCA is not based on an assumption that data come from a given probability distribution (Fiss, 2011, p. 402).

Third, this work primarily focuses on institutional environments, regardless of the characteristics of national companies and regardless of the differences between systems of corporate governance across countries. To that regard, previous research has found that legal, cultural and labour environments play the most relevant role in shaping female representation on boards (e.g., Adams and Kirchmaier, 2013; Grosvold and Brammer, 2011). Although this evidence provides some support for paying main attention on the institutional antecedents for women on boards, on the other hand it is clear that differences in types of companies and corporate governance systems may have some consequences for the analysis. For this reason, future studies could address the presence of complementarities also in relation to the characteristics of firms and corporate boards and investigate their effects on the number of women in top corporate positions.

Moreover, although the analysis includes differences between the implementation of strong and soft regulation for gender diversity on boards, the enforcement of the law varies across countries. For instance, the strong enforcement in Norway or France determines a direct relationship between the number of women on boards and gender quotas. Conversely, the weak enforcement in some other countries may have feeble consequences on the number of women on boards. In order to overcome this limitation, future works could develop in-depth case studies aimed to explore the role that the enforcement of law might have on the actual necessity and sufficiency of gender quotas for boards of directors.

Finally, it is clear that the conceptual model presented in this research context is static in its nature. This is mainly related to the fact that QCA is particularly time insensitive, i.e. the order by which conditions are linked through logical AND or OR does not matter (Schneider and Wagemann, 2012). However, in line with Grandori and Furnari (2008, p. 22), "the specification of whether any element, or package of elements, is necessary or sufficient, and which elements are substitutable, provide a starting basis for developing dynamic models". When this study investigates the current status of complementarities between institutions and it finds support for their existence, it is posing the basis for further research which could address the dynamics of institutional change for increasing the number of women on boards. As previously noted (see § 5.3.1), further research may investigate the presence of a hierarchy between institutions, as well as the direction of institutional change. Taken together, these issues constitute a very challenging research agenda on the institutional dynamics that may contribute to substantial changes in the numbers of women on boards.

5.5 Conclusion

This study has employed a set-theoretic approach using fs/QCA to understand whether, why and which country-level conditions are causally and jointly related to female representation on boards. In doing so, it has showed the importance of knowing the causal antecedents of women on boards to assess the necessity and sufficiency of gender regulatory policies at board level. By filling important gaps in extant literature, this work contributes to the corporate governance research in several ways. On the one hand, it refines and advances previous insights on the institutional view of gender diversity on boards. In detail, it theoretically informs and empirically verifies the existence of institutional complementarities between welfare states, labour markets and national cultures. Moreover, it argues that the more "un-gendered" is the nature of these institutions, the greater is the number of women on boards. The findings of the qualitative comparative analysis reveal the existence of a unique ideal configuration of national attributes that is sufficient to achieve a greater presence of women on boards. This is the most notable result for this research, since it provides strong support to the assumption that a more equal division of gender roles within families, labour and cultural institutions can lead to a greater presence of women on boards, more than the single enactment of gender quotas does. Indeed, gender quotas for boards of directors are found to be neither a necessary nor a sufficient condition to achieve a higher number of women on boards. Overall, these findings have important policy implications, especially with regard to the design of policies (or mix of policies) to promote the representation of women in board positions. More rational legislative initiatives should consider that the introduction of gender quotas at board level might be not a sufficient

regulatory policy to promote female representation on boards of directors if gender persists in other institutions. Finally, this study suggests and illustrates several pathways for a new research agenda devoted to deepen the dynamics of institutional change for increasing the number of women in top corporate positions.

CHAPTER SUMMARY

This chapter has discussed the results derived from the qualitative comparative analysis between the 27 EU countries. The analysis of individual sufficiency has revealed that, taken one at time, the elected national attributes are not sufficient on their own for the outcome, while they result sufficient if combined one another. This evidence implicitly supports the existence of complementarities between such institutional attributes. In detail, the unique configuration resulting from the empirical analysis almost exactly overlaps with the "ideal" conjunction of causal conditions that was formulated in Proposition 1 (excepted for the condition "high level of female part time employment"). Since this configuration reflects theory-based assumptions, relating to the causal relations between complementary institutions, it can be conceived as an (almost) "ideal type" of national model for gender diversity on boards. To that effect, the farther is a country from this "superior" national configuration, the worse its performance in terms of women on corporate boards is likely to be. The underlying causal mechanisms imply that the presence of complementary institutions, which mutually reinforce their similar structures in an un-gendered perspective, allows for a more egalitarian distribution of power and opportunities between women and men in a given social system. Conversely, the empirical occurrence of a unique configuration of country-level causal conditions implicitly leads to contradict the theoretical assumption about the individual sufficiency of gender quotas for a higher number of women on boards (Proposition 2), while it confirms that gender quotas for corporate boards are not a necessary condition to achieve a higher number of women on boards of directors (Proposition 3). Taken together, this evidence suggests that the adoption of gender quotas for boards of directors might be attributable more to reasons of diffusion or social legitimization rather than to rational reasons about their actual effectiveness in the existing national configurations. After discussing the results, this chapter has presented the main theoretical and practical contributions of the research. The most relevant insight is that more rational legislative initiatives should consider that the introduction of gender quotas at board level might be not a sufficient regulatory policy to promote female representation on boards of directors if gender persists in other institutions. Finally, this chapter has illustrated some limitations of the research, thus suggesting a new research agenda aimed at investigating the dynamics of institutional change for increasing the number of women in top corporate positions.

REFERENCES

Acker, J., 1992. Gendered Institutions: From Sex Roles to Gendered Institutions. *Contemporary Sociology,* 21(5), pp. 565–69.

Adams, R. B. & Kirchmaier, T., 2013. Making It to the Top: From Female Labor Force Participation to Boardroom Gender Diversity. *ECGI Finance Working Paper,* 347, pp.1–47.

Adams, R., de Haan, J., Terjesen, S. & van Ees, H., 2015. Editorial. Board diversity: moving the field forward. *Corporate Covernance: An International Review,* 23(2), pp. 77-82.

Adams, R. & Ferreira, D., 2009. Women in the boardroom and their impact on governance and performance. *Journal of Financial Economics,* 94(2), pp. 291–309.

Adams, S. M. & Flynn, P., 2005. Local knowledge advances women's access to corporate boards. *Corporate Governance: An International Review,* 13(6), pp. 836–846.

Aguilera, R. V. & Cuervo-Cazurra, A., 2004. Codes of good governance worldwide: What is the trigger? *Organization Studies,* 25(3), pp. 415–443.

Aguilera, R. V., Filatotchev, I., Gospel, H. & Jackson, G., 2008. An organizational approach to comparative corporate governance: Costs, contingencies, and complementarities. *Organization Science,* 19(3), pp. 475–492.

Aguilera, R. V. & Jackson, G., 2003. The cross-national diversity of corporate governance: Dimensions and determinants. *Academy of Management Review,* 28(3), pp. 447–465.

Ahern, K. R. & Dittmar, A. K., 2012. The changing of the boards: The impact on firm valuation of mandated female board representation. *Quarterly Journal of Economics,* 127(1), p. 137–197.

Ahlering, B. & Deakin, S., 2007. Labor regulation, corporate governance, and legal origin: A case of institutional complementarity? *Law & Society Review,* 41(4), p. 865–908.

Alon, A., 2013. Complexity and Dual Institutionality: The case of IFRS adoption in Russia. *Corporate Governance: An International Review,* 21(1), pp. 42–57.

Alstott, A., 2014. Gender Quotas for Corporate Boards: Options for Legal Design in the United States. *Pace International Law Reveview 38,* 26(1), pp. 38-56 Available at: http://digitalcommons.pace.edu/pilr/vol26/iss1/5.

Amable, B., 2000. Institutional complementarity and diversity of social systems of innovation and production. *Review of International Political Economy,* 7(4), pp. 645–687.

Amable, B., 2003. *The diversity of modern capitalism.* Oxford: Oxford University Press.

Amable, B., Ernst, E. & Palombarini, S., 2005. How do financial markets affect industrial relations: an institutional complementarity approach. *Socio-Economic Review,* 3(2), pp. 311–330.

Aoki, M., 2001. *Toward a comparative institutional analysis.* Cambridge, MA: MIT Press.

Arfken, D. E., Bellar, S. E. & Helms, M. M., 2004. The ultimate glass ceiling revisited: The presence of women on corporate boards. *Journal of Business Ethics,* Volume 50, pp. 177–186.

Arthur, J., 1992. The link between business strategy and industrial relations systems in American steel minimills. *Industrial and Labor Relations Review,* Volume 45, pp. 488-506.

Aschcraft, K., 1999. Managing Maternity Leave: A qualitative analysis of temporary executive succession. *Administrative Science Quarterly,* Volume 44, pp. 240-280.

Bailey, K., 1994. *Methods of Social Research.* Fourth Edition ed. New York: The Free Press.

Bakacsi, G., Takàcs, S., Karàcsonyi, A. & Imrek, V., 2002. Eastern European cluster: Tradition and transition. *Journal of World Business,* Volume 37, pp. 69-80.

Barnett, R. & Hyde, J., 2001. Women, Men, Work, and Family. An Expansionist Theory. *American Psychologist,* 56(10), pp. 781-796.

Berger, P. L. & Luckmann, T., 1966. *The Social Construction of Reality: A Treatise in the Sociology of Knowledge.* Garden City, New York: Anchor Books.

Bergstø, K., 2013. Women mean business: why and how Norway legislated gender balance on the boards of listed companies. In: S. Machold, M. Huse, K. Hansen & M. Brogi, eds. *Getting Women on to Corporate Boards – A Snowball Starting in Norway.* Cheltenham, UK and Northampton, MA,USA: Edward Elgar, pp. 21-23.

Bilimoria, D. & Huse, M., 1997. A qualitative comparison of the boardroom experiences of US and Norwegian corporate directors. *International Review of Women and Leadership,* 3(2), pp. 63-76.

Bilimoria, D. & Piderit, S., 1994. Board Committee Membership: Effects of Sex-Based Bias. *Academy of Management Journal,* 37(6), pp. 1453-1477.

Bissola, R., Imperatori, B. & Colonel, R., 2014. Enhancing the Creative Performance of New Product Teams: An Organizational Configurational Approach. *Journal of Product Innovation Management,* 31(2), pp. 375–391.

Black, J. & Boal, K., 1994. Strategic resources: Traits, configurations and paths to sustainable competitive advantage. *Stategic Management Journal,* Volume 15, pp. 131-148.

Blasi, A., 2006. *Matematica. Corso base per la facoltà di Economia.* Roma: Edizioni Kappa .

Bøhren, Ø. & Staubo, S., 2013. *Female directors and board independence: Evidence from boards with mandatory gender balance.* Working paper, BI Norwegian Business School.

Bøhren, Ø. & Staubo, S., 2014. Does mandatory gender balance work? Changing organizational form to avoid board upheaval. *Journal of Corporate Finance,* Volume 28, pp. 152–168.

Bøhren, Ø. & Strøm, R. Ø., 2010. Governance and Politics: Regulating Independence and Diversity in the Board Room. *Journal of Business Finance & Accounting. Oxford: Blackwell Publishing Ltd,* 37(9&10), pp. 1281–1308.

Børve, E., 2007. Pregnant Bodies. Norwegian Female Employees in Global Working Life. *European Journal of Women's Studies,* 14(4), pp. 311-326.

Boyer, R., 2005. *Coherence, diversity and evolution of capitalisms: the institutional complementarity hypothesis,* Unpublished Mimeo: CEPREMAP.

Brogi, M., 2013. Italy's lessons learnt from Norway. In: S. Machold, M. Huse, K. Hansen & M. Brogi, eds. *Getting Women on to Corporate Boards–A Snowball Starting in Norway.* Cheltenham, UK and Northampton, MA,USA: Edward Elgar, pp. 187-190.

Burgess, Z. & Tharenou, P., 2002. Women board directors: Characteristics of the few. *Journal of Business Ethics,* 37(1), pp. 39–49.

Burke, R., 2000. Company size, board size, and the numbers of women corporate directors. In: R. Burke & M. Mattis, eds. *Women on Corporate Boards of Directors: International Challenges and Opportunities.* Dordrecht, The Netherlands: Kluwer, pp. 118–25.

Burke, R. J., 1997. Women on corporate boards of directors: A needed resource. *Journal of Business Ethics,* 16(9), pp. 909-915.

Burke, R. & Kurucz, E., 1998. Demographic characteristics of Canadian women corporate directors. *Psychological Reports,* 83(2), pp. 461-462.

Burri, S. & Aune, H., 2013. *Sex discrimination in relation to part time and fixed-term work: The application of EU and national law in practice in 33 European countries,* European Union: Brussels.

Burri, S. & Prechal, S., 2013. *EU Gender Equality Law,* European Commission: European network of legal experts in the field of gender equality, DOI 10.2838/84769.

Campbell, J., 2011. The US financial crisis: lessons for theories of institutional complementarity. *Socio-Economic Review,* 9(2), pp. 211–234.

Campbell, K. & Mìnguez-Vera, A., 2008. Gender Diversity in the Boardroom and Firm Financial Performance. *Journal of Business Ethics,* Volume 83, pp. 435-451.

Campbell, K. & Minguez-Vera, A., 2010. Female board appointments and firm valuation: shortand long-term effects. *Journal of Management & Governance,* Volume 14, pp. 37-59.

Carli, L. J., 1990. Gender, language, and influence. *Journal of Personality and Social Psychology,* 59(5), p. 941–952.

Carter, D., D'Souza, F., Simkins, B. & Simpson, G., 2010. The Gender and Ethnic Diversity of US Boards Committees and Firm Financial Performance. *Corporate Governance: An International Review,* 18(5), pp. 396-414.

Carter, D., Simkins, B. & Simpson, G., 2003. Corporate governance, board diversity, and firm value. *Financial Review,* Volume 38, pp. 33–53.

Chang, M., 2000. The evolution of sex segregation regimes. *The American Journal of Sociology,* 105(6), pp. 1658—1701.

Chapple, C. & Humphrey, J., 2014. Does board gender diversity have a financial impact? Evidence using stock portfolio performance. *Journall of Business Ethics,* Volume 122, pp. 709-723.

Connell, R., 1987. *Gender and Power: Society, the Person, and Sexual Politics.* Stanford: Stanford University Press.

Council of Europe Family Policy Database, 2009. *Reconciliation of work and family life,* Council of Europe: Available at: www.coe.int/familypolicy/database (Last update, April 30, 2009).

Crouch, C., 2005. Complementarity and fit in the study of capitalisms . In: G. Morgan, R. Whitley & E. Moen, eds. *Changing Capitalisms? Internationalization, Institutional Change, and Systems of Economic Organization.* Oxford: Oxford University Press, pp. 167–189.

Cuomo, S. & Mapelli, A., 2011. Gender diversity e corporate governance dopo la legge Golfo Mosca. *Economia & Management,* Volume 6, pp. 41-48.

Davaki, K., 2010. Benefits of maternity / parental leave in the eu 27. A review of the literature. In: Policy Department A & Policy Department B, eds, *Costs and benefits of maternity and paternity leave, Brussels.* Brussels: European Parliament, pp. 68-90.

De Anca, C., 2008. Women on corporate boards of directors in Spanish listed companies. In: S. Vinnicombe, *et al.* eds *Women on corporate boards of directors: International research and practice.* Cheltenham: Edward Elgar, pp. 96-107.

De Meur, G. & Rihoux, B., 2002. *L'Analyse quali-quantitative comparée (AQQCQCA): approche, techniques et applications en sciences humaines.* Louvain-la-Neuve: Academia-Bruylant.

Deeg, R., 2007. Complementarity and institutional change in capitalist systems.. *Journal of European Public Policy,* 14(4), pp. 611–630.

Delery, J. & Doty, D., 1996. Modes of theorizing in strategic human resource management: tests of universalistic, contingency, and configurational performance predictions. *Academy of Management Journal,* 39(4), pp. 802-835.

Denis, D. K. & McConnell, J. J., 2003. International corporate governance. *Journal of Financial and Quantitative Analysis,* 38(1), pp. 1–36.

Denzau, A. T. & North, D. C., 1994. Shared mental models: Ideologies and Institutions. *KYKLOS,* 47(1), pp. 3–31.

Dezsö, C. & Ross, D., 2012. Does female representation in top management improve firm performance? A panel data investigastion. *Strategic Management Journal,* Volume 33, pp. 1072-1089.

Doldor, E., Vinnicombe, S., Gaughan, M. & Sealy, R., 2012. *Gender diversity on boards: The appointment process and the role of executive search firms.Equality and Human Rights Commission Research Report, 85,* Cranfield School of Management: International Centre for Women Leaders.

Doty, D. & Glick, W., 1994. Typologies as a unique form of theory building: Toward improved understanding and modeling. *Academy of Management Review,* Volume 19, pp. 230-251.

Doty, D., Glick, W. & Huber, G., 1993. Fit, equifinality, and organizational effectiveness: A test of two configurational theories. *Academy of Management Journal,* Volume 36, pp. 1196-1250.

Drew, E. & Murtagh, E. M., 2005. Work/life balance: Senior management champions or laggards? *Women in Management Review,* 20(4), pp. 262-278.

Eagly, A. H., 2007. Female leadership advantage and disadvantage: resolving the contradictions northwestern university. *Psychology of women quarterly,* Volume 31, pp. 1–12.

Erhardt, N., Werbel, J. & Shrader, C., 2003. Board of director diversity and firm fnancial Performance. *Corporate Governance: An International Review,* 11(2), pp. 102–11.

Erkut, S., Kramer, V. W. & Konrad, A. M., 2008. Critical mass: does the number of women on a corporate board make a difference? In: S. Vinnicombe, *et al.* eds. *Women on Corporate Boards of Directors: International Research and Practice.* Cheltenham: Edward Elgar, pp. 222-232.

Esping-Andersen, G., 1990. *The three worlds of welfare capitalism.* Cambridge: Polity Press.

Esping-Andersen, G., 1999. *Social Foundations of Postindustrial Economies.* Oxford: Oxford University Press.

Eszter, S., 2011. *Part-time work in Europe. European Company Survey 2009,* Publications Office of the European Union: Luxembourg. Available at: https://www. Q9 eurofound.europa.eu/publications/report/2011/working-conditions-law-and- regulation /part-time-work-in-europe.

European Commission, 2012a. *Women in economic decision-making in the EU: Progress report,* Luxembourg: Publications Office of the European Union.

European Commission, 2012b. *Your social security rights country by country.* European Union, Web source: http://ec.europa.eu/social/main.jsp?catId=858.

European Commission, 2012c. *Women and men in decision-making,* EU: Available at: http://ec.europa.eu/justice/gender-equality/gender-decision-making/database/index_ en.htm.

European Commission, 2014 . *Database on women and men in decision-making: Methodology,* EU, Available at: http://ec.europa.eu/justice/gender-equality/files /database/wmid_methodology_dec_2014.pdf .

EU-SILC, 2012. *Childcare arrangements,* Available at: http://ec.europa.eu/eurostat /tgm/table.do?tab=table&init=1&language=en&pcode=tps00185&plugin=1 (Accessed September, 2014).

Eydal, G. & Gislason, I., 2008. Paid parental leave in Iceland: History and context. In: G. Eydal & I. Gislason, eds. *Equal right to earn and care:Parental leave in Iceland.* Reykjavik: Félagsvisindastofnun Haskola Islands, pp. 15-44.

Ferreira, D., 2015. Commentary. Board diversity: Should we trust research to inform policy? *Corporate Governance: An International Review,* 23(2), pp. 108–111.

Finkelstein, S. & Hambrick, D., 1996. *Strategic leadership: Top executives and their effects on organizations.* USA: West Publishing Company.

Fiss, P., 2007. A Set-Theoretic Approach to Organization Configurations. *Academy of Management Review,* 32(4), pp. 1180-1198.

Fiss, P., 2011. Building Better Causal Theories: A Fuzzy Set Approach to Typologies in Organization Research. *Academy of Management Journal,* 54(2), pp. 393-420.

Fiss, P., Marx, A. & Cambré, B., 2013. Configurational theory and methods in organizational research: Introduction. In: P. Fiss, A. Marx & B. Cambré, eds. *Configurational theory and methods in organizational research. Research in the Sociology of Organizations, Volume 38.* Bingley, UK: Emerald Group Publishing Limited, pp. 1-22.

Francoeur, C., Labelle, R. & Sinclair–Desgagnè, B., 2008. Gender diversity in corporate governance and top management. *Journal of Business Ethics,* Volume 81, pp. 83-95.

Gabaldon, P., de Anca, C., de Cabo, R.M. & Gimeno, R., 2015. Searching for women on boards: An analysis from the supply and demand perspective. *Corporate Governance: An international Review, forthcoming.*

Ganguli, I., Hausmann, R. & Viarengo, M., 2011. The closing of the gender gap in education: does it foretell the closing of the employment, marriage, and motherhood gaps? *Working Papers. Center for International Development at Harvard University, CID Working Paper,* Issue 220.

Garcìa-Castro, R., Aguilera, V. & Ariño, M., 2013. Bundles of Firm Corporate Governance Practices: A fuzzy Set Analysis. *Corporate Governance An International Review,* 21(4), pp. 390-407.

Gennari, F., 2015. *L'uguaglianza di genere negli organi di Corporate Governance.* Milano: FrancoAngeli.

Giddens, A., 1984. *The Constitution of Society: Outline of the Theory of Structuration.* Berkeley and Los Angeles: University of California Press.

Girotti, F., 1998. *Welfare State.* Italy: Carocci.

Grandori, A. & Furnari, S., 2008. Organization Studies. *A chemistry of organization Combinatory analysis and design,* Volume 29, pp. 459-485.

Grandori, A. & Furnari, S., 2013. Configurational analisys and organizational design: Towards a theory of structural heterogeneity. In: P. Fiss, B. Cambré & A. Marx, eds. *Configurational theory and methods in organizational research. Research in the Sociology of Organizations, Volume 38.* Bingley, UK: Emerald Group Publishing Limited, pp. 77-105.

Greener, I., 2005. The potential of path dependence in political studies. *Politics,* 25(1), pp. 62-72.

Grey, S., 2006. Numbers and Beyond: The Relevance of Critical Mass in Gender Research. *Politics & Gender,* 2(4), pp. 491–530.

Grosvold, J. & Brammer, S., 2011. National Institutional Systems as Antecedents of Female Board Representation: An Empirical Study. *Corporate Governance: An International Review,* 19(2), pp. 116–135.

Guest, D., 1997. Human resource management and performance: a review and research agenda. *The International Journal of Human Resource Management,* 8(3), pp. 263-276.

Gueutal, G., Luciano, J. & Michaels, C., 1995. Pregnancy in the workplace: does pregnancy affect performance appraisal ratings? *Journal of Business and Psychology,* 10(2), pp. 155-167.

Guillaume, C. & Pochic, S., 2007. What would you sacrifice? Access to top management and the work – life balance. *Gender, Work and Organization,* 16(1), pp. 14-36.

Gupta, V., Hanges, P. & Dorfman, P., 2002. Cultural clusters: methodology and findings. *Journal of International Business,* Volume 37, pp. 11-15.

Heilman, M. E., Block, C. J. & Lucas, J. A., 1992. Presumed incompetent? Stigmatization and affirmative action efforts. *Journal of Applied Psychology,* Volume 77, pp. 536–544.

Heilman, M. E., Simon, M. C. & Repper, D. P., 1987. Intentionally favored, unintentionally harmed? Impact of sex-based preferential selection on selfperceptions and self-evaluations. *Journal of Applied Psychology,* Volume 72, pp. 62–68.

Hillman, A., 2015. Board diversity: Beginning to unpeel the onion. *Corporate Governance: An International Review,* 23(2), pp. 104-107.

Hoel, M., 2008. The quota story: Five years of change in Norway. In: S. Vinnicombe, *et al.* eds. *Women on corporate boards of directors: International research and practice.* Cheltenham: Edward Elgar, pp. 79–87.

Hofstede, G., 1983. National cultures in four dmensions: A research-based theory on cultural differences among nations. *International Studies of Management and Organizations,* 13(1-2), pp. 46-74.

Höpner, M., 2005a. What connects industrial relations and corporate governance? Explaining institutional complementarity. *Socio-Economic Review,* 3(2), pp. 331–358.

Höpner, M., 2005b. Epilogue to 'Explaining institutional complementarity'. What have we learnt? Complementarity, coherence and institutional change. *Socio-Economic Review,* 3(2), pp. 383-387.

Huse, M., 2007. *Boards, governance, and value creation: The human side of corporate governance.* Cambridge: Cambridge University Press.

Huse, M., 2013. The political process behind the gender balance law. In: S. Machold, M. Huse, K. Hansen & M. Brogi, eds. *Getting Women on to Corporate Boards –A Snowball Starting in Norway.* Cheltenham, UK and Northampton, MA,USA: Edward Elgar, pp. 9-16.

Huse, M., Nielsen, S. & Hagen, I., 2009. Boards of directors, codetermination, and women directors: Societal and business case CSR illustrations from Norway. *Journal of Business Ethics,* Volume 89, pp. 581–597.

Huse, M. & Seierstad, C., 2014. Getting Women on to Corporate Boards: Consequences of the Norwegian Gender Balance Law. *The European Financial Review*, December 2013 - Jenuary 2014, pp. 37–39.

Huse, M. & Solberg, A. G., 2006. Gender-related boardroom dynamics: How Scandinavian women make and can make contributions on corporate boards. *Women in Management Review,* 21(2), pp. 113–30.

Iannotta, M., Gatti, M. & Huse, M., 2015. Institutional Complementarities and Gender Diversity on Boards: A Configurational Approach. *Corporate Governance: An International Review,* doi: 10.1111/corg.12140.

Imperatori, B. & Paolino, C., 2013. Organizational costs of maternity management. *Economia & Management,* Volume 4, pp. 94-107.

International Labor Organization, 2010. *Maternity at work: A review of national legislation. Findings from the ILO Database of Conditions of Work and Employment Laws,* Geneva: ILO. Available at: http://www.ilo.org/wcmsp5/groups/public/@dgreports/@dcomm/@p.

International Labour Organization, 2012. *Maternity protection resource package. From aspiration to reality for all. Module 6: maternity leave and related types of leave,* Geneva: ILO: Available at: http://www.ilo.org/global/publications/ilo-bookstore/order-online/books/WCMS_193968/lang--en/index.htm.

Jackson, G., 2005. *Toward a Comparative Perspective on Corporate Governance and Labour Management,* RIETI Discussion Paper Series 04-E-023.

Jackson, G. & Deeg, R., 2008. Comparing capitalisms: Understanding institutional diversity and its implications for international business. *Journal of International Business Studies,* 39(4), pp. 540–561.

Jackson, G. & Ni, N., 2013. Understanding complementarities as organizational configurations: Using set theoretical methods. In: P. Fiss, B. Cambrè & A. Marx, eds. *Configurational theory and methods in organizational research. Research in the sociology of organizations. Volume 38.* Bingley, UK: Emerald Group Publishing Limited, pp. 129-158.

Joecks, J., Pull, K. & Vetter, K., 2013. Gender diversity in the boardroom and firm performance: What exactly constitutes a "critical mass"? *Journal of Business Ethics,* 118(1), pp. 61-72.

Judge, W., Li, S. & Pinsker, R., 2010. National adoption of international accounting standards: An institutional perspective. *Corporate Governance: An International Review,* 18(3), pp. 161–174.

Judge, W. Q., Douglas, T. J. & Kutan, A. M., 2008. Institutional antecedents of corporate governance legitimacy. *Journal of Management,* Volume 34, pp. 765–785.

Juhlin, M. & Marsh, K., 2010. Proposition of a methodology to determine and quantify the benefits of maternity leave. In: Policy Department A & Policy Department B, eds., *Costs and benefits of maternity and paternity leave.* Brussels: European Parliament, pp. 50-63.

Kang, H., Chen, G. & Gray, S. J., 2007. Corporate governance and board composition: Diversity and independence of Australian boards. *Corporate Governance: An International Review,* 15(2), pp. 194–207.

Kang, N. & Moon, J., 2012. Institutional complementarity between corporate governance and Corporate Social Responsibility: a comparative institutional analysis of three capitalisms. *Socio-Economic Review,* 10(1), pp. 85–108.

Kanter, R. M., 1977a. Men and Women of the Corporation. *Basic Books, New York.*

Kanter, R. M., 1977b. Some Effects of Proportions on Group Life. *American Journal of Sociology,* 82(5), pp. 965– 990.

Kogut, B., MacDuffie, J. & Ragin, C., 2004. Prototypes and strategy: assigning causal credit using fuzzy sets. *European Management Review,* Volume 1, pp. 114-131.

Kogut, B. & Ragin, C., 2006. Exploring complexity when diversity is limited: Institutional complementarity in theories of rule of law and national systems revisited. *European Management Review,* 3(1), pp. 44-59.

Konrad, A. M., Kramer, V. & Erkut, S., 2008. Critical mass: the impact of three or more women on corporate boards. *Organizational dynamics,* 37(2), pp. 145-164.

Lee, P. M. & James, E. H., 2007. She-e-os: Gender effects and investor reactions to the announcements of top executive appointments. *Strategic Management Journal,* 28(3), pp. 227–241.

Linehan, M. & Walsh, J., 2000. Work – Family Conflict and the Senior Female International Manager. *British Journal of Management,* 11(s1), pp. S49-S58.

Lorber, J., 1994. *Paradoxes of Gender.* New Haven, CT : Yale University Press.

Lyness, K., Thompson, C., Francesco, A. & Judiesch, M., 1999. Work and Pregnancy: Individual and organizational factors influencing organizational commitment, timing of maternity leave, and return on work. *Sex Roles,* Volume 41, pp. 102-118.

Mackie, J., 1965. Causes and conditions. *American Philosophical Quarterly,* Volume 2, pp. 245-264.

Mackie, J., 1974. *The cement of the Universe. A study of causation.* Oxford, UK: Oxford University Press.

Mahoney, J., 2010. *What is a concept? Two definitions and their research implications.* Evanston, IL: Mimeo, Northwestern University.

Mahoney, J., Kimball, E. & Koivu, K., 2009. The logic of historical explanation in the social sciences. *Comparative Political Studies,* 42(1), pp. 114-146.

Manchester, C. F., Leslie, L. M. & Kramer, A., 2010. Stop the clock policies and career success in academia. *American Economic Review,* 100(2), pp. 219–223.

Mandel, H. .. & Shalev, M., 2009. How Welfare States Shape the Gender Pay Gap: A Theoretical and Comparative Analysis. *Social Force,* 87(4), pp. 1873–1912.

Mandel, H. & Semyonov, M., 2006. A Welfare State Paradox: State Interventions and Women's employment opportunities in 22 countries. *American Journal of Sociology,* 11(6), pp. 1910–1949.

Margherita, A., O'Dorchai, S. & Bosch, J., 2009 . *Reconciliation between work, private and family life in the European Union,* Luxembourg: Office for Official Publications of the European Communities.

Martin, P., 2004. Gender as Social Institution. *Social Forces,* 82(4), pp. 1249–1273.

Matsa, D. A. & Miller, A. R., 2013. A female style in corporate leadership? Evidence from quotas. *American Economic Journal: Applied Economics,* Volume 5, pp. 136–169.

Mayer, K., 2009. Whose lives? How History, Societas, and Institutions Define and Shape Life Courses. *Research in Human Development ,* 1(3), pp. 161–187.

McCluskey, E. J., 1956. Minimization of Boolean functions. *Bell Systems Technical Journal,* Volume 35, pp. 1417–1444.

McPherson, M., Smith-Lovin, L. & Cook, J. M., 2001. Birds of a feather: Homophily in social networks. *Annual Review of Sociology,* Volume 27, pp. 415–444.

Meyer, A. D., Tsui, A. & Hinings, C., 1993. Configurational approaches to organizational analysis. *Academy of Management Review,* Volume 36, pp. 1175-1195.

Milgrom, P. & Roberts, J., 1995. Complementarities and fit strategy, structure and organizational change in manufacturing. *Journal of Accounting and Economics,* 19(2-3), pp. 179–208.

Miller, D. & Friesen, P., 1984. *Organizations: A Quantum View.* Englewood Cliffs, N.J.: Prentice-Hall.

Minguez-Vera, A. & Martin, A., 2011. Gender and management on Spanish SMEs: an empirical analysis. *The International Journal of Human Resource Management,* 22(14), pp. 2852-2873.

Misra, J. & Moller, S., 2005. *Familialism and Welfare Regimes: Poverty, Employment, and Family Policies.* Working Paper, 399, Luxembourg Income Study.

Molina, Ó. & Rhodes, M., 2007. Conflict, complementarities and institutional change in mixed market economies. In: B. Hancké, M. Rhodes & M. Thatcher, eds. *Beyond Varieties of Capitalism: Contradictions, Complementarities and Change.* Oxford: Oxford University Press.

Morrison, A., P., W. R. & Van Velsor, E., 1992. *Breaking the glass ceiling: Can women reach the top of America's largest corporations'?* MA: Addison-Wesley Publishing Co.

Moss, P., 2012. *10th International Review of Leave Policies and Related Research 2014,* London: International Network on Leave Policies and Research. Available at: http://www.leavenetwork.org/fileadmin/Leavenetwork/Annual_reviews/2012_annual_r eview.pdf.

Neale, W. C., 1988. Institutions. In: M. Tools, ed. *Foundations of Institutional Thought, 1.* New York: Sharpe Inc., pp. 227–256.

Nelson, T. & Levesque, L., 2007. The status of women in corporate governance in high − growth, high − potential firms. *Entrepreneurship Theory and Practice*, March, pp. 209-232.

Nguyen, H. & Faff, R., 2012. Impact of board size and board diversity on firm value: Australian evidence. *Corporate Ownership and Control,* Volume 4, pp. 24-32.

Nielsen, S. & Huse, M., 2010. The Contribution of Women on Boards of Directors: Going beyond the Surface. *Corporate Governance: An International Review,* 18(2), pp. 136–148.

Nisbet, R. A., 1953. *The Quest for Community.* New York: Oxford University Press.

Nitm, C. & Soobaroyen, T., 2013. Corporate Governance and Performance in socially responsible corporations: New empirical insight from a Neo-Institutional framework. *Corporate Governance: An International Review,* 21(5), pp. 468–494.

North, D. C., 1990. *Institutions, institutional change, and economic performance.* Oxford: Oxford University Press.

North, D. C., 1991. Institutions. *Journal of Economic Perspectives,* 5(1), pp. 97–112.

Nugent, J. & Lin, J., 1995. Institutions and Economic Development. In: H. Chenery, T. N. Srinivasan & J. Behrman, eds. *Handbook of Development Economics.* Amsterdam: North-Holland, Elsevier.

Oakley, J., 2000. Gender-based barriers to senior management positions: Understanding the scarcity of female CEOs. *Journal of Business Ethics,* Volume 27, pp. 321–34.

OECD , 2012a. *Pf 2.5 Annex: detail of change in parental leave by country Last updated 10/10/2012,* OECD Family Database: Social Policy Division - Directorate of Employment, Labour and Social Affairs. Web source: www.oecd.org/els/social/family/database.

OECD, 2012b. *PF2.1: Key characteristics of parental leave systems ,* Social Policy Division - Directorate of Employment, Labour and Social Affairs : OECD Family database, Last updated 10/10/2012. Web source: www.oecd.org/social/family/database .

OECD Employment Outlook, 1995. *Chapter 5, Long-term leave for parents in OECD countries,* OECD: Last update May, 2002.

Orloff, A., 1993. Gender and the Social Rights of Citizenship: The Comparative Analysis of Gender Relations and Welfare States. *American Sociological Review,* 58(3), pp. 303–328.

Orloff, A., 1996. Gender in the welfare state. *Annual Review of Sociology,* 22(1), pp. 51–78.

Pande, R. & Ford, D., 2011. *Gender Quotas and Female Leadership: A Review. Background Paper for the World Development Report on Gender,* Cambridge, MA: Harvard University.

Pardo, I. & Perlines, F., 2008. The relationship between human re source strategies and business outcom: A configurational approach. *Portuguese Journal of Management Studies,* 13(2), pp. 193-218.

Parsons, T. & Bales, R. F., 1955. *Family, socialization and interaction process.* Glencoe, IL: Free Press.

Payne, G., 2006. Examining configurations and firm performance in a suboptimal equifinality context. *Organization Science,* Volume 17, pp. 756–770.

Payne, G. & Payne, J., 2004. *Key Concepts in Social Research.* London: Sage Publications..

Peterson, C. & Philpot, J., 2007. Women's roles on U.S. fortune 500 boards: Director expertise and committee memberships. *Journal of Business Ethics,* 72(2), pp. 177-186.

Pierson, P., 2000. Increasing returns, path dependence, and the study of politics. *American Political Science Review,* 94(2), pp. 251-267.

Post, C. & Byron, K., 2015. Women on boards and firm financial performance: A meta analysis. *Academy of Management Journal,* doi: 10.5465/amj.2013.0319.

Quine, W. V., 1955. A way to simplify truth functions. *American Mathematical Monthly,* Volume 62, pp. 627–631.

Ragin, C., 1987. *The Comparative Method: Moving beyond Qualitative and Quantitative Strategies.* Berkeley: University of California Press.

Ragin, C., 2000. *Fuzzy-set Social Science.* Chicago: University of Chicago Press.

Ragin, C., 2006. Set relations in social research: Evaluating their consistency and coverage. *Political Analysis Advamce Access,* Volume 14, pp. 291-310.

Ragin, C., 2008a. *Re-designing Social Inquiry.* Chicago: University of Chicago Press.

Ragin, C., 2009. Qualitative Comparative Analysis Using Fuzzy Sets (fsQCA). In: B. Rihoux & C. C. Ragin, eds. *Configurational Comparative Methods. Qualitative Comparative Analysis (QCA) and Related Techniques.* Thousand Oaks, CA: Sage Publications, pp. 87-121.

Ragin, C. C., 2008b. *User's guide to Fuzzy-Set/Qualitative Comparative Analysis. Based on: fs/QCA 2.0.,* Tucson, Arizona: Department of Sociology, University of Arizona.: Web source: http://www.u.arizona.edu/~cragin/fsQCA/download/fsQCA Manual.pdf. .

Ragin, C. C., 2008c. Measurement versus calibration: A set-theoretic approach. In: J. Box-Steffenmeier, H. Brady & D. Collier, eds. *The Oxford handbooks of polical methodology. Volume of "The Oxford handbooks of political science".* Oxford: Oxford University Press, pp. 174-198.

Ragin, C., Drass, K. A. & Davey, S., 2006. Fuzzy-Set/Qualitative Comparative Analysis 2.0. *Tucson, Arizona: Department of Sociology, University of Arizona Review,* Volume 3, pp. 44–59.

Ragins, B., Townsend, B. & Mattis, M., 1998. Gender Gap in the Executive Suite: CEOs and Female Executives Report on Breaking the Glass Ceiling. *Academy of Management Executive,* 12(1), pp. 28-42.

Rasmussen, J. A. & Huse, M., 2011. Corporate governance in Norway: women and employee-elected board members. In: C. A. Mallin, ed. *Handbook on International Corporate Governance. Country Analyses.* Cheltenham: Edward Elgar, pp. 121-146.

Ray, R., 2008. *A Detailed Look at Parental Leave Policies in 21 OECD Countries. ,* Washington (September 2008): CEPR Center for Economic and Policy Research.

Ray, R. G., Ornick, J. & Schmitt, J., 2009. *Parental Leave Policies in 21 Countries. Assessing Generosity and Gender Equality,* Washington: CEPR Center for Economic and Policy Research.

Rediker, K. & Seth, A., 1995. Boards of directors and substitution effects of alternative governance mechanisms. *Strategic Management Journal,* 16(2), pp. 85–99.

Rihoux, B., 2006. Qualitative Comparative Analysis (QCA) and Related Systematic Comparative Methods: Recent Advances and Remaining Challenges for Social Science Research. *International Sociology,* 21(5), pp. 679-706.

Rihoux, B. & Ragin, C., 2009. *Configurational Comparative Methods. Qualitative Comparative Analysis (QCA) and Related Techniques.* Thousand Oaks, CA: Sage Publications.

Rose, C., 2007. Does female board representation influence firm performance? The Danish evidence. *Corporate Governance: An International Review,* 15(2), pp. 404-413.

Ryan, M. K. & Haslam, S. A., 2005. The glass cliff: Evidence that women are over-represented in precarious leadership positions. *British Journal of Management,* Volume 16, pp. 81–90.

Ryan, M. K. & Haslam, S. A., 2007. Glass cliffs: Exploring the dynamics surrounding the appointment of women to precarious leadership positions. *Academy of Management Review,* 32(2), pp. 549–572.

Schneider, C. Q. & Wagemann, C., 2012. *Set-Theoretic Methods for the Social Sciences. A guide to Qualitative Comparative Analysis.* Cambridge: Cambridge University Press.

Schneider, C. & Wagemann, C., 2010. Standars of good practice in Qualitative Comparative Analysis (QCA) and fuzzy-sets. *Comparative Sociology,* Volume 9, pp. 1-22.

Schulze, E. & Gergoric, M., 2015. *Maternity, paternity and parental leave: Data related to duration and compensation rates in the European Union,* European Union: Brussels: PolicyDepartmentC.

Scott, J., 1990. *A Matter of Record, Documentary Sources in Social Research.* Cambridge: Polity Press.

Scott, W., 1987. The adolescence of Institutional Theory. *Administrative Science Quarterly,* 32(4), pp. 493–511.

Scott, W. R., 1995. *Institutions and organizations.* Thousand Oaks, CA: Sage.

Sealy, R., Singh, V. & Vinnicombe, S., 2007. *The Female FTSE Report 2007,* Cranfield, UK: Cranfield School of Management: International Centre for Women Leaders.

Sealy, R. & Vinnicombe, S., 2013. *Female FTSE Board Report 2013: False dawn of progress for women on boards?,* Cranfield, UK: Cranfield School of Management.

Sealy, R., Vinnicombe, S. & Singh, V., 2008. *The Female FTSE Report 2008,* Cranfield, UK: Cranfield School of Management: Cranfield International Centre for Women Leaders.

Seierstad, C., 2015. Beyond the business case: The need for both utility and justice rationales for increasing the share of women on boards. *Corporate Governance: An International Review, forthcoming.*

Seierstad, C. & Opsahl, T., 2011. For the few not the many? The effects of affirmative action on presence, prominence, and social capital of women directors in Norway. *Scandinavian Journal of Management,* 27(1), pp. 44-54.

Seierstad, C., Warner-Søderholm, G., Torchia, M. & Huse, M., 2015. Increasing the number of women on boards: The role of actors and processes. *Journal of Business Ethics,* pp. 1-27, DOI 10.1007/s10551-015-2715-0.

Sheridan, A. & Milgate, G., 2005. Accessing Board Positions: A Comparison of Women's and Men's Views. *Corporate Governance: An International Review,* 13(6), pp. 847-855.

Shrader, C., Blackburn, V. & Iles, P., 1997. Women in management and firm value: An exploratory study. *Journal of Managerial Issues,* Volume 9, pp. 355–72.

Singh, V., Terjesen, S. & Vinnicombe, S., 2008. Newly appointed directors in the boardroom: How do women and men differ? *European Management Journal,* 26(1), pp. 48–58.

Singh, V. & Vinnicombe, S., 2004. Why So Few Women Directors in Top UK Boardrooms? Evidence and Theoretical Explanations. *Corporate Governance: An international Review,* 12(4), pp. 479-488.

Singh, V. & Vinnicombe, S., 2006. *Female FTSE Index and Report 2006: Identifying the New Generation of Women Directors,* Cranfield: Cranfield School of Management.

Soda, G. & Furnari, S., 2012. Exploring the typology of the plausible: Fs/QCA counterfactual analysis and the plausible fit of unobserved organizational configurations. *Strategic Organization,* 10(3), pp. 285-296.

Spencer, S., Steele, C. & Quinn, D., 1999. Stereotype Threat and Women's Math Performance. *Journal of Experimental Social Psychology,* 35(1), pp. 4-28.

Storvik, A. & Teigen, M., 2010. *Women on Board: The Norwegian Experience.* Berlin, Friedrich Ebert Stiftung, International Policy Analysis. Available at: http://library.fes.de/pdf-files/id/ipa/07309.pdf.

Swiss, D. & Walker, J., 1993. *Women and the work/family dilemma.* New York: John Wiley & Sons.

Tajfel, H. & Turner, J. C., 1986. The social identity theory of intergroup behavior. In: S. Worchel & W. G. Austin, eds, *Psychology of Intergroup Relations.* Chicago, IL: Nelson-Hall, pp. 7–24.

Teigen, M., 2012. Gender Quotas on Corporate Boards: on The Diffusion of a Distinct National Policy Reform. In: F. Engelstad & M. Teigen, eds. *Firms, Boards and Gender Quotas: Comparative Perspectives, Book series: Comparative Social Research. Volume 29.* Bingley, UK: Emerald Group Publishing Limited, pp. 115–146.

Teigen, M. & Wangnerud, L., 2009. Tracing gender equality cultures: Elite perceptions of gender equality in Norway and Sweden. *Politics & Gender,* 5(1), pp. 21–44.

Terjesen, S., Aguilera, R. & Lorenz, R., 2014. Legislating a Woman's Seat on the Board: Institutional Factors Driving Gender Quotas for Boards of Directors. *Journal of Business Ethics,* 50(2), pp. 177–186.

Terjesen, S., Sealy, R. & Singh, V., 2009. Women directors on Corporate Board: A review and Research Agenda. *Corporate Governance: An international Review,* 17(3), pp. 320-327.

Terjesen, S. & Singh, V., 2008. Female presence on corporate boards: A multi-country study of environmental context. *Journal of Business Ethics,* 83(1), pp. 55–63.

The Economist, 2015a. Parental Leave. More Hands to rock the cradle. *The Economist*, 16th-22nd May, pp. 12-14.

The Economist, 2015b. Parenting and work. A father's place. *The Economist*, 16th-22nd May, pp. 52-53.

Thevenon, O., 2010. The consequences of the extension of the maternity leave on women's participation on the labour market. In: Policy Department A & Policy Department C, eds, *Costs and benefits of maternity and paternity leave.* Brussels: European Parliament, pp. 127-134.

Thiem, A. & Duşa, A., 2013. Boolean Minimization in Social Science Research: A Review of Current Software for Qualitative Comparative Analysis (QCA). *Social Science Computer Review,* 31(4), pp. 505-521.

Thomsen, H. & Urth, H., 2010a. Fully paid maternity leave of 18 and 20 weeks. Impact assessment. In: Policy Department A & Policy Department B, eds. *Costs and benefits of maternity and paternity leave.* Brussels: European Parliament, pp. 3-46.

Thomsen, H. & Urth, H., 2010b. Fully paid paternity leave of 2 weeks. Impact assessment. In: Policy Department A & Policy Department B, eds. *Costs and benefits of maternity and paternity leave.* Brussels: European Parliament, pp. 94-124.

Torchia, M., Calabr, A. & Huse, M., 2011. Women Directors on Corporate Boards: From Tokenism to Critical Mass. *Journal of Business Ethics,* 102(2), pp. 299–317.

Unzueta, M., Gutiérrez, A. & Ghavami, N., 2010. How believing in affirmative action quotas affects White women's self-image. *Journal of Experimental Social Psychology,* Volume 46, pp. 120–126.

Vinnicombe, S., Doldor, E. & Turner, C., 2014. *The Female FTSE Board Report 2014: Crossing the finish line. Cranfield International Centre for Women Leaders,* Cranfield, UK: Cranfield School of Management.

Wagemann, C., 2014. Qualitative Comparative Analysis (QCA): What it is, What it does, and How it works. In: D. Della Porta, ed. *Methodological practices in social movement research.* Oxford, UK: Oxford University Press, pp. 43-66.

Wang, M. & Kelan, E., 2013. The gender quota and female leadership: Effects of the Norwegian gender quota on board chairs and CEOs. *Journal of Business Ethics,* 17(3), pp. 449–466.

Weimer, J. & Pape, J. C., 1999. A taxonomy of systems of corporate governance. *Corporate Governance: An International Review,* 7(2), pp. 152–166.

Westphal, J. & Zajac, E., 1995. Who Shall Govern? CEO/Board Power, Demographic Similarity, and New Director Selection. *Administrative Science Quarterly,* 40(1), pp. 60-83.

Williams, J., Summer 2005, no. 130. The Glass Ceiling and the Maternal Wall in Academia.. *New Directions For Higher Education. Wiley Periodicals*, pp. 91-105.

Williams, J., 2000. *Unbending gender: Why work and family conflict and what to do about it.* s.l.:Oxford, UK: Oxford University Press..

Williams, J., 2003. Beyond the Glass Ceiling: The Maternal Wall as a barrier to Gender Equality. *Thomas jefferson Law Review. University of California, Hastings College of the Law.,* 1 1, 26(1), pp. 1-14. Available at: http://repository.uchastings. edu/faculty_scholarship/806.

Williams, J. & Westfall, E. S., 2006. Deconstructing the Maternal Wall: Strategies for Vindicating the Civil Rights of "Carers" in the Workplace. *Duke Journal of gender Law & Policy*, pp. 13:31-53. Available at: http://repository.uchastings.edu/faculty_ scholarship/7.

World Economic Forum, 2013. *The Global Gender Gap Report,* Geneva: World Economic Forum.

Zadeh, L. A., 1965. Fuzzy sets. *Information and Control,* Volume 8, pp. 338-353.

Zattoni, A. & Cuomo, F., 2008. Why adopt codes of good governance? A comparison of institutional and efficiency perspectives. *Corporate Governance: An International Review,* 16(1), pp. 1–15.

Zattoni, A., Douglas, T. & Judge, W., 2013. Developing corporate governance approach theory through qualitative research. *Corporate Governance: An International Review,* 21(2), pp. 119-122.

Zattoni, A., Pedersen, T. & Kumar, V., 2009. The performance of group-affiliated firms during institutional transitions: A longitudinal study of Indian firms. *Corporate Governance: An International Review,* 17(4), pp. 510-523.

Zelechowski, D. & Bilimoria, D., 2004. Characteristics of women and men corporate inside directors in the US. *Corporate Governance: An International Review,* 12(3), pp. 337–342.

Zimmermann, H., 2010. Fuzzy Set Theory. *Advanced Review,* 2(May/June, 2010), pp. 317-332.

LIST OF TABLES

LIST OF FIGURES

LIST OF FORMULAS